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THE MEDICAL JOURNAL OF AUSTRALIA.

VOL. I.—8TH YEAR. SYDNEY: SATURDAY, JANUARY 22, 1921. No. 4.

ACCESSORY FOOD FACTORS AND THEIR INFLUENCE ON NUTRITION.

By **Elsie Dalyell, O.B.E., M.B.,**
Beit Memorial Research Fellow.

PART I.
Introductory.

The following account of this subject has been based on the Special Report, No. 38, published by the Medical Research Committee, London, 1919, and drawn up by the Accessory Food Factors Committee, appointed jointly by the Lister Institute, London, and the Medical Research Committee.

Prolonged investigations into the physiological processes of the animal body have long since established a standard for the food supply requisite for the body needs. This is expressed quantitatively in terms of calories and qualitatively consists of proteins, fats, carbo-hydrates, inorganic salts and water.

In the last ten years additional light has been thrown on the subject of the dietetic needs of the animal body by investigation of certain imperfectly known constituents of natural food substances which occur in relatively small amounts, but have been shown to exert a profound influence on nutrition. At the present time none of these constituents has been isolated in a pure form, but the evidence of their existence and of their specificity in nutrition, is sufficiently definite to permit them to be described as accessory food factors, to allow them to be studied quantitatively and to assert that their presence is essential to healthy growth and development of the animal organism.

In England experimental work on this subject was first carried out at Cambridge by Hopkins, who showed from results published in 1911-1912 that young animals receiving a highly-purified artificial diet of caseinogen, starch, cane sugar, lard and inorganic salts, failed to develope and ultimately declined and died, although the food intake had been quantitatively adequate for normal growth (1). He showed further that with additions of minute quantities of fresh milk to such a dietary, normal growth and development were resumed, although the amount of milk was negligible as a calorific addition. Similar results followed from the addition to the diet of yeast or protein-free extracts of milk. In presenting these results Hopkin's own statement is as follows:

> It is possible that what is absent from artificial diets and supplied by such addenda as milk and tissue extracts is of the nature of an organic complex (or of complexes) which the animal body cannot synthesize. But the amount which seems sufficient to secure growth, is so small that a catalytic or stimulative function seems more likely.

He also suggested at this time the term "accessory factors of the diet" for these unknown substances.

In 1913 MacCollum and Davis published in America confirmatory experiments which showed also that young rats ceased to grow when fed on an artificial diet of protein, starch, lard and salts, but that normal development was restored when the ether-soluble fraction of butter fat or of eggs was added to the diet (2). This observation stimulated extensive research on this point and important contributions were made to the subject by Osborne and Mendel (3), (4), (5), and by MacCollum and his colleagues (6), with the object of determining the relative values of various fats for promoting growth and development. The investigations showed that a growth-promoting substance occurred in animal fats, such as butter fat, beef fat and cod liver oil, but could not be demonstrated by the use of vegetable oils, *e.g.*, olive oil, cotton seed oil, linseed oil.

The idea prevailing at this time was that this growth-promoting substance soluble in fat was the only one needed to supply the nutritive deficiency in a purified artificial diet; but in 1915 Funk and Maccallum (7) showed that even with this addition to a highly purified diet, young animals failed to show normal growth and developed symptoms suggestive of beri-beri. Normal development was resumed, however, when the diet was further enriched by the addition—on analogy of beri-beri preventive experiments—of small quantities of yeast, as well as of animal fat, to the diet.

TABLE A.

Showing Identity of Distribution of Water-Soluble B and the Anti-Neuritic Factor.

Foodstuff.	Value as source of Water-Soluble B (as shown by experiments on rats).	Value as source of Anti-Neuritic Factor (as shown by experiments on birds).
Rice Germ	+++	++++
Wheat Germ	+++	+++
Linseed	++	
Lentils		+++
Yeast	+++	+++
Egg-Yolk	++	+++
Ox-Liver	++	+++
Wheat Bran	+	++
Fresh Peas	+	
Dried Peas		++
Fresh Carrots	+	
Dried Carrots	+	
Meat Muscle	+	+
Milk	+	Slight
Potatoes	+	+
Meat Extract	0	0
Meat (Tinned)		V. Slight
White Bread or Flour	0	0
Polished Rice	0	0

(Reproduced from Medical Research Council's Special Report Series, No. 38, 1919.)

These observations indicated the possibility of a growth-promoting substance other than that soluble in fat and later in 1915 the fact of the existence of two essential accessory factors in the diet was definitely formulated by MacCollum and Davis (8), who stated: "That there are necessary for nutrition during growth two classes of unknown accessory substances, one soluble in fats and accompanying them in the process of isolation from certain foodstuffs and the other soluble in water but not in fats." The differentiation of these factors as "fat-soluble A" and "water-soluble B" has proved a convenient means of distinguishing them by descriptive terms.

Investigations into the cause and prevention of

beri-beri had established the evidence of a food constituent essential to prevent this disease and had shown that this preventive element was found specially in seeds of plants, egg-yolk, yeasts and germ of cereal grains. The researches made to determine the nature and distribution of the water-soluble B accessory factor revealed that its occurrence corresponds to that of the anti-beri-beri substance in seeds, eggs, yeast and cereal germ and that the properties of the two, so far as they have been determined, correspond closely, as is set out in Table A.

Moreover, the symptoms produced in growing animals by withholding the supply of water-soluble B from the diet are closely analogous to those developed in cases of beri-beri and respond in the same way to treatment. From this evidence it has been considered legitimate to conclude that the anti-beri-beri constituent of food and the water-soluble B accessory factor in diet are identical; it is justifiable to describe the condition of beri-beri arising after long deprivation of an essential food factor, as a "deficiency disease."

Until the end of 1915 our knowledge of accessory factors in food extended only to the work done with fat-soluble A and water-soluble B, but the clue to the existence of deficiency diseases had been given by study of beri-beri. Arguing from this, it was natural to infer that scurvy, long known to be associated with dietetic deficiency, might be traced to lack of specific accessory factor, which, if once determined, could be used for prevention of the disease.

Investigation in this direction was stimulated by the occurrence of scurvy among large bodies of troops in the remote areas of war in 1915. Beri-beri appeared at the same time and attention was drawn to the need for extended knowledge of the anti-neuritic factor and its prophylactic use among troops.

These outbreaks demanded immediate practical application of measures to combat such deficiency diseases; for this purpose work was undertaken that led to long and arduous series of animal experiments, carried out at the Lister Institute and elsewhere during the last five years. Means for the adequate protection of troops against scurvy and beri-beri were first determined and carried successfully into practice, so that after the first two years of the war these diseases did not occur. Subsequently, research was continued to gain further knowledge of the relation of accessory food factors to specific deficiency diseases.

The accessory food factors studied were: fat-soluble A, water-soluble B and anti-scorbutic factor. Initial work was carried out on animals and the principles adopted were the same throughout, modified in practice by the use of different kinds of laboratory animals for each branch of investigation.

Groups of young animals, uniform in weight, were selected for experimental feeding. A suitable basal diet, very accurately measured, was prepared and administered to individual animals. The diet chosen contained adequate calories, but was so lacking in a known accessory food factor that the associated deficiency disease would appear in the animal within a definite time. The composition of such a basal diet was ascertained by repeated experiments until the time in which the resultant disease would appear was definitely established for susceptible animals.

From these data the preventive value of various foodstuffs could be determined by adding carefully measured amounts of such materials to the basal diet and observing their effect in delaying or preventing the onset of deficiency disease or in modifying its course. In this way a table was gradually compiled, showing the relative values of ordinary foods in various accessory food factors.

These values are indicated in the accompanying tables, quoted by permission from Special Report, No. 38, of the Medical Research Council.

In general the experimental schemes were as follows: For water-soluble B (or anti-neuritic factor) pigeons of 300-400 grammes weight were used, owing to their known susceptibility to deficiency of this substance; the birds received a diet of milled and polished rice. Symptoms of polyneuritis developed in 15-25 days and preventive substances were considered effective if no symptoms appeared after 60 days of special feeding.

Anti-Scorbutic Factor.

Guinea-pigs were used for experimental work in scurvy, as their susceptibility to this disease had been proved by Holst and Frolich (9). Young healthy animals of 330 grammes weight were fed on dry grain with the addition of milk autoclaved at 120° C. for one hour. Scurvy symptoms, *e.g.*, tenderness and swelling of the joints, limbs and jaws, with numerous hæmorrhages, appeared after 20 days and, if untreated, the disease progressed, causing death after 30-40 days of a diet lacking in anti-scorbutic factor.

The anti-scorbutic values tabulated for foods are based on the minimal amounts required to protect these animals from scurvy in 90 days on such a diet, with satisfactory growth during this period.

Fat-Soluble A Factor.

For this investigation guinea-pigs are not suitable, as their natural diet does not include free fat; the work has been carried out on rats and young dogs fed on diets deficient in fat-soluble A, though not always deficient in fat.

Rats of 70 grammes weight showed results of deprivation within one month and in puppies of six weeks the effects were apparent after 40 days of such special diet as separated milk, white bread, linseed oil, yeast, orange juice and salt. The condition produced in these animals was one of delayed or arrested growth, with occurrence of bony deformities in the limbs, analogous to the changes of rickets that occur in young children. All results of special importance were confirmed by feeding experiment with monkeys, carried out over long periods.

It is necessary to emphasize the fact that in animal work of this kind especial care was taken to insure a high degree of accuracy in the quantitative dietetic investigations and to provide closest attention to hygienic conditions, to obviate outbreaks complicating the specific diseases under considration.

On these lines the numerous experiments of the last five years have been carried out and notable contributions have been made to the study of accessory factors and deficiency diseases by H. Chick and the

workers at the Lister Institute, London, Cooper, Funk and MacCallum (London); J. C. Drummond (London), E. and M. Mellanby (Cambridge) and in America by Osborne and Mendel, MacCollum and Davis, Hess and Ungar, and others. This work has been collected and summarized in an important monograph published in London in 1919 by the Medical Research Committee and the Lister Institute (10), in which a wide field is covered and extensive tables of reference given of the work produced up to the time of publication. The tables incorporated in this article are reproduced from the report by permission of the Medical Research Committee.

Conclusions may be expressed briefly as follows:

(*a*) Three accessory food factors have been shown to exist, but have not been isolated in pure form and their chemical composition is not known.

(*b*) Evidence indicates that none of the accessory factors is synthesized in the animal body, but is derived ultimately from the plant world to be utilized in the animal body.

Animal products containing accessory food factors (*e.g.*, milk and animal fats) will vary in their content of these substances according to the supply in the animal's diet of vegetable foods rich in accessory food factors.

(*c*) Removal of any of these factors from diet leads to deficiency disease, the time of onset and degree of the disease being proportional to the degree of deficiency of the specific factor.

Under ordinary conditions, the mixed diet of adult populations renders unlikely any severe deprivation of a special factor; war and famine conditions which impose defective diets, generally involve more than one deficiency, so that resultant diseases are thus complicated.

In ordinary life the theory of deficiency of specific factors is chiefly applicable to the restricted diets of infants and young children, for whom a proportionally high content of all three factors is essential.

(*d*) All evidence goes to show that accessory food factors are concerned in processes of tissue formation and repair and that the amounts needed are in proportion to the rate of metabolism in the body concerned. Thus such conditions of increased metabolism as heavy manual labour, strenuous exercise and exposure to cold, favour the development of deficiency disease amongst bodies of men on defective dietaries. Most important is the indication from animal experiments that the rapidly-growing young body, with its active metabolism, has relatively greater need of accessory factors than the adult organism; in the growing period the degree of damage from such deficiency is more profound and extensive than that caused in adult tissues by corresponding deprivation.

While it may be stated that the end result of continued deficiency of any of the three accessory substances is to produce disease and to cause limitation of growth, these extreme results do not express the whole danger of such deprivation. Before the condition of recognizable disease or of growth limitation is reached, a gradual impairment of *metabolic* activity may continue for a considerable time with defective tissue development in the rapidly growing young organism, especially with regard to bone formation.

In the following paragraphs details of individual factors are briefly summarized:

(*i.*) The distribution of water-soluble A is widespread and small quantities occur in many natural foodstuffs. It is present most abundantly in eggs

TABLE B.

Protective Values of Various Foodstuffs Against Scurvy.

Foodstuff.	Value Against Scurvy.	Minimum Daily Ration to Prevent Scurvy in Guinea-Pigs.
Whole Grain	0	
Germ	0	
Bran	0	
Endosperm, *e.g.*, white wheaten flour, polished rice	0	
Whole Dry Pulses	0	
Germinated Pulses	++	5 grammes
Cabbage (raw)	++++	1 gramme
Cabbage (cooked ½ hour at 100° C.)	++	5 grammes
Runner Beans, green pods	+++	5 grammes
Carrot (juice)	+	20 grammes
Beetroot (juice)	+	More than 20 grammes
Swede Turnip (juice)	+++	2.5 grammes
Potato (cooked ½ hour at 100° C.)	+	20 grammes
Onion	+	
Dried Vegetables	+ to 0	60 grm. expressed as fresh cabbage
Pickled Vegetables	0	
Lemon Juice, fresh	++++	1.5 c.cm.
Lemon Juice, preserved	++	5 c.cm.
Orange Juice, fresh	++++	1.5 c.cm.
Lime Juice, fresh	++	10 c.cm.
Lime Juice, preserved	+ to 0	
Grapes	Less than +	More than 20 grammes
Apples	Less than +	
Eggs (whites)	? 0	
Eggs (yolks)	? 0	
Dried Eggs	? 0	
Meat (raw juice)	Less than +	More than 20 c.cm.
Meat (tinned)	0	
Milk, Cow's (raw)	Less than +	100 to 150 c.cm.
Milk, Cow's (dried)	Less than raw	
Yeast	? 0	

and in seeds of plants, but in preparation of cereals by milling the portion containing the factor is commonly removed. This accessory factor is stable, withstands drying and preservative methods without damage and can be heated up to 120° C. without marked diminution in potency. It is soluble in water and alcohol and is present in milk. When the diet is continuously deficient in this factor, the development of young animals is checked and in adults symptoms of beri-beri gradually appear.

(*ii.*) Anti-scorbutic accessory factor occurs only in fresh living tissue and more abundantly in plant tissues than in those of animal origin. Different fruits and vegetables vary greatly in anti-scorbutic value. Most potent is the juice of oranges or of lemons, but the juice of limes has only one-fifth of the value of lemons. Of other fruits raspberries and strawberries are of high value; grapes and apples are inferior as anti-scorbutics. The raw juices of swede turnips, cabbage, lettuce, tomatoes and watercress contain abundant anti-scorbutic, but carrots and beet-root are deficient. Raw beans stand high, but dried beans, peas and lentils, like all other dried vegetables, have lost all anti-scorbutic property. When dried pulses (peas, beans, lentils) are germinated, however, by exposing the unmilled grains to warmth and moisture for 48-60 hours, the anti-scorbutic property is restored as germination takes place. For this reason germinated pulses may be a valuable means of providing anti-scorbutic material when no fresh vegetables are available. Potatoes when cooked have but a small content of this factor, but as a considerable amount is consumed, this is an important source of anti-scorbutic for the general population. In fresh milk the anti-scorbutic factor is present in such amount that 100 c.cm. of fresh milk is equivalent to 1 c.cm. of lemon juice.

The anti-scorbutic principle is much more unstable than water-soluble B or fat-soluble A. It is destroyed by drying and by all ordinary preservative processes and no dried foodstuffs can prevent scurvy. It is very sensitive to heat and is destroyed or seriously damaged by the usual processes of preparing food by cooking.

It passes readily through dialysing parchment or porcelain filter, is soluble in water and alcohol and deteriorates rapidly in an alkaline medium.

Deficiency of this factor in diet causes recognizable scurvy to appear after a period proportional to the degree of deprivation. Infants on a diet of sterilized milk and dried foods, without proper anti-scorbutic addition in form of fruit or vegetable juices, may show severe scurvy at five months of age, but more commonly the gross symptoms appear at the age of 8 to 12 months. The tissue changes, however, have extended over many months before the disease is recognized and grave damage to growing structures may take place before the diagnostic signs are evident.

(*iii.*) Fat-soluble A.—The important sources of this factor are cream, butter, beef fat, fish oil and yolk of egg. Lard is inferior to other animal fats and vegetable fats have little value as a source of this accessory factor. The substance is stable and is not affected by drying, by preservative methods nor by heating to 100° C..

The effects of deficiency differ in young animals from those produced in adults. Growth of young animals is checked and development of tissues, particularly of bones, is defective, leading to various degrees of deformity.

In human adults, the condition produced is that of "hunger-osteomalacia" so-called, characterized by severe disability in movement of the body and lower limbs, with occasional occurrence of spontaneous fracture of bones.

TABLE C.

The Distribution of the Three Accessory Factors in the Commoner Foodstuffs.

Classes of Foodstuff.	Fat-Soluble A or Anti-Rachitic Factor.	Water-Soluble B or Anti-Neuritic (Anti-Beri-Beri) Factor.	Anti-Scorbutic Factor.
Fats and Oils—			
Butter	+++	0	
Cream	++	0	
Cod-Liver Oil	+++	0	
Mutton Fat	++		
Beef Fat or Suet	++		
Pea-Nut or Arachis Oil	+		
Lard	0		
Olive Oil	0		
Cotton Seed Oil	0		
Coco-Nut Oil	0		
Coco Butter	0		
Linseed Oil	0		
Fish Oil, Whale Oil. Herring Oil, etc.	++		
Hardened Fats, animal or vegetable origin	0		
Margarine Prepared from Animal Fat	Value in proportion to amount of animal fat contained		
Margarine from Vegetable Fats or Lard	0		
Nut Butters	+		
Meat, Fish, etc.—			
Lean Meat (beef, mutton, etc.)	+	+	+
Liver	++	++	+
Kidneys	++	+	
Heart	++	+	
Brain	+	++	
Sweetbreads	+	++	

(Continued on next page.)

TABLE C.—*Continued.*

The Distribution of the Three Accessory Factors in the Commoner Foodstuffs.

Classes of Foodstuff.	Fat-Soluble A or Anti-Rachitic Factor.	Water-Soluble B or Anti-Neuritic (Anti-Beri-Beri) Factor.	Anti-Scorbutic Factor.
Meat, Fish, etc.—Continued.			
Fish, white	0	Very slight, if any	
Fish, fat (salmon, herring, etc.)	++	Very slight, if any	
Fish, roe	+	++	
Tinned Meats	?	Very slight	0
Milk, Cheese, etc.—			
Milk, Cow's, whole, raw	++	+	+
Milk, Cow's, skim, raw	0	+	+
Milk, Cow's, dried, whole	Less than ++	+	Less than +
Milk, Cow's, boiled, whole	Undetermined	+	Less than +
Milk, Condensed, sweetened	+	+	Less than +
Cheese, whole milk	+		
Cheese, skim	0		
Eggs—			
Fresh	++	+++	? 0
Dried	++	+++	? 0
Cereals, Pulses, etc.—			
Wheat, Maize, Rice, whole grain	+	+	0
Wheat, Maize, germ	++	+++	0
Wheat, Maize, bran	0	++	0
White Wheaten Flour, Pure, Cornflour, Polished Rice, etc.	0	0	0
Custard Powders, Egg Substitutes, Prepared from Cereal Products	0	0	0
Linseed, Millet	++	++	0
Dried Peas, Lentils, etc.		++	0
Peaflour (kilned)		0	0
Soy Beans, Haricot Beans	+	++	0
Germinated Pulses or Cereals	+	++	++
Vegetables and Fruits—			
Cabbage, fresh	++	+	+++
Cabbage, fresh (cooked)		+	+
Cabbage, dried	+	+	Very slight
Cabbage, canned			Very slight
Swede, raw expressed juice			+++
Lettuce	++	+	
Spinach, dried	++	+	
Carrots, fresh, raw	+	+	+
Carrots, dried	Very slight		
Beetroot, raw, expressed juice			Less than +
Potatoes, raw	+	+	
Potatoes, cooked			+
Beans, fresh, Scarlet Runners, raw			++
Onions, cooked			+ (at least)
Lemon Juice, fresh			+++
Lemon Juice, preserved			++
Lime Juice, fresh			++
Lime Juice, preserved			Very slight
Orange Juice, fresh			+++
Raspberries			++
Apples			+
Bananas	+	+	Very slight
Tomatoes (canned)			++
Nuts	+	++	
Miscellaneous—			
Yeast, dried		+++	
Yeast Extract and Autolysed	?	+++	0
Meat Extract	0	0	0
Malt Extract		+ in some specimens	
Beer		0	0

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Reports of Cases.

PRIMARY ROUND CELLED SARCOMA OF THE STOMACH.

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Although primary sarcoma of the stomach is not the rarity it was once thought to be, it is still uncommon enough to justify the publication of any authentic case.

The proportion of sarcoma among malignant tumours of the stomach is variously reported as being from 1% up to 8%. Possibly, in the absence of microscopic examination, cases of sarcoma have been erroneously reported as carcinoma.

Round-celled and spindle-celled forms of sarcoma predominate. The round-celled variety appears as a dense, diffuse infiltration of the gastric wall, which may project into the lumen of the stomach. It is usually situated near the pylorus and along the greater curvature.

Unlike cancer, it does not stenose, but by its infiltration it renders the wall of the stomach rigid and the pylorus patulous. The expulsive power of the antrum is interfered with by the involvement of the muscular coat. The growth may invade the œsophagus and duodenum. It is rarely palpable, though usually nodular. It differs from the spindle-celled variety in its more rapid growth, its earlier metastases, its shorter course and its smaller size.

Microscopically, the most evident character is the presence of small round cells of variable size, most of them with mitoses. The spindle-celled variety is less common. Here the growth is usually pedunculated and may grow to a large size, forming a hard, movable, polypoid mass, which may fill the greater part of the abdominal cavity and may be mistaken before operation for an ovarian cyst.

In either type metastases may be found in the peritoneum, spleen, liver, lungs or subcutaneous tissue, but they occur later than in carcinoma.

The symptoms are not definite, but in the majority of cases signs of digestive disturbances are noted. Pain is the most constant symptom and though not always purely gastric in type, may be severe; occasionally it occurs a definite time after taking food. Nausea and vomiting may be present, but are not frequent, as there is seldom pyloric obstruction; vomiting occurs in about 10% of cases as a late symptom.

Hæmorrhage is rare in the round-celled type, but occurs in half the spindle-celled variety. Anæmia is not frequent. Loss of weight may be considerable, but is not a constant symptom. Except in the pedunculated (spindle-celled) variety, the tumour is rarely palpable. Where reported as having been palpated, it varied in size, situation and mobility. Epigastric tenderness is occasionally present. Stomach analyses give results similar to those of carcinoma.

Not many radioscopic examinations have been recorded. In the writer's case the X-ray examination disclosed signs of interference with gastric motility, with dilatation and delay in emptying.

The duration of symptoms prior to operation varies in the reported cases from two to twelve months. A history of long-standing dyspepsia and pyloric obstruction is seldom encountered. The disease is more common in women. The average age of incidence is 41.6, as compared with 61.2 years for carcinoma of the stomach. The youngest patient was 3½ years of age, the oldest 85.

The diagnosis is generally microscopic and many of the reported cases were discovered *post mortem*. Frazier says the clinical diagnosis is never made, but Loeper advises the centrifugalizing of the stomach contents and staining the sediment, as in the round-celled variety. The cells have been found by this method under the microscope.

The prognosis varies with the duration of the disease prior to operation and the character of the tumour. Patients with the spindle-celled variety are reported to have survived from three months to fourteen years, the average being twenty-eight months.

In the round-celled, the true gastric type Hartz gives the average period of survival as fifteen months, while Loeper says, as the operation in that type is more delicate, the results are poor. His statistics include only four survivals out of nineteen patients treated by operation. He emphasizes the importance of early operation in all suspected cases and Frazier says the size and duration of the tumour should not deter the surgeon from resecting as much of the stomach as is necessary without undue risk, as metastasis takes place relatively late.

The following are the notes of a case of the round-celled variety, in a patient who is alive and well 22 months after partial gastrectomy:

Mrs. S., age 33 years, a stout, well-nourished, healthy-looking woman, was seen at 2 a.m. on November 1, 1918.

Family History.—Her father suffered from gall-stone colic; her mother and one sister were healthy; three sisters died at birth. She had three healthy children.

Previous History.—Her first pregnancy was complicated by *placenta prævia*; her third pregnancy was extra-uterine. She had cystitis with the first two pregnancies. She had a mild attack of influenza some months ago, but no other illnesses.

History of Present Condition.—For about six months she had attacks of indigestion and heart trouble, which she regarded as after-effects of influenza. During the attacks she suffered from pain and frequent micturition and became cyanosed. The pain was always situated in the left upper region of the abdomen, came on one hour after food and was eased by food and alkalies. It was accompanied by flatulence, but not by nausea or vomiting. The attacks were of brief duration and occurred at intervals of several days or weeks; during the intervals she felt well and did her housework. Her appetite was good, her bowels acted daily and there was no loss of weight.

On examination during the attack she complained of very severe pain in the left hypochondrium, extending down the left arm. Her pulse was hurried, but regular, and she was cyanosed and somewhat collapsed. She stated that this was the most severe attack she had experienced. It resembled *angina pectoris*. There was moderate tenderness in the mid-epigastric region, five centimetres above the umbilicus. There was no rigidity and no palpable tumour.

Subsequent examination revealed no evidence of valvular or myocardial trouble. The systolic blood pressure was 140 mm.. The lungs were clear. The thyreoid gland was moderately enlarged and firm. There was no enlargement of the liver or spleen. The urine was normal. A report of an opaque meal examination by Dr. Hewlett revealed a large, slowly emptying stomach, with persisting duodenal shadow and a large ilial stasis, with a freely moving caecum. An analysis of stomach contents was not made. A diagnosis of gastric ulcer was made and treatment by rest, dieting and alkalies carried out; but this failed to prevent the attacks of pain.

On February 24, 1919, I opened the abdomen to the left of the middle line in the epigastric region and found a large, soft, sessile, lobulated, grayish-pink mass occupying the lesser curvature of the stomach and the pylorus. The serous coat of the anterior surface of the stomach was hyperæmic, with prominent enlarged white lymphatic lines of extension running towards the greater curvature. The tumour lacked the firmness of carcinoma, but was obviously malignant and was unlike any gastric growth I had seen. The liver and spleen were free from nodules. The distal half of the stomach was resected (a large deep ulcer being found on the mucous surface of the tumour), together with the pylorus and upper 5 cm. of the duodenum. There was much difficulty in suturing the cut end of the duodenum. An anastomosis was made between the lower half of the divided end of the stomach and the jejunum. The appendix, being adherent, was removed. The incision in the abdominal wall broke down on the fourth day and bile in large quantities was discharged for three weeks, probably coming from the proximal end of the duodenum. The fistula gradually closed and the subsequent recovery was uneventful.

The tumour was examined by Dr. C. H. Mollison, who reported it to be sarcoma of the stomach of the round-celled variety. The patient is now—22 months after operation—in good health, has a good appetite, is without pain and is attending to all her household duties. There is no sign of recurrence or metastasis.

There was nothing in the clinical history of this case to aid in the diagnosis of sarcoma of the stomach. Lesions of digestive organs, *e.g.*, gall-stones, gastric ulcer, chronic appendicitis, may cause angina-like attacks of pain and even myocardial spoiling. Gastric symptoms of several months'

duration not yielding promptly to medical treatment, with X-ray finding showing interference with gastric motility, but without vomiting, loss of weight, cachexia and the general debility found in cancer of the same duration, should lead us to suspect sarcoma of the stomach and to advise early operation.

References.

Ewing: "Neoplastic Diseases," page 254.
Fisher: *Annals of Surgery*, Vol. 69, May, 1919, page 539.
Frazier: *American Journal of Medical Sciences*, Vol. 147, June, 1914, page 78; also *Boston Medical and Surgical Journal*, December 25, 1919, quoted in "Practical Medicine" Series, 1920, Vol. I., page 556.
Hartz: *Surgery, Gynecology and Obstetrics*, Vol. 18, 1914, page 532.
Kemp: "Diseases of Stomach, Intestines and Pancreas," page 363.
Morison: "Regional Surgery" (Binnie), Vol. 2, page 105.
Sherren: "System of Surgery" (Choyce), Vol. 2, page 393.
Loeper: *Progrès Médical*, November 15, 1919, quoted in "Practical Medicine" Series, 1920, Vol. I., page 558.
Douglas: *Annals of Surgery*, May 1920, page 628.

Reviews.

INDUSTRIAL DERMATOSES.

Dr. Prosser White's book on "Occupational Affections of the Skin"[1] is really a textbook and should be of very great value, not only to dermatologists, but also to general practitioners, especially in Australia, where the long distances patients have to travel to consult specialists makes it difficult for some to do so at all. This book has now appeared in its second edition. The number of skin affections that are connected in some way or other with the occupation of an artisan, a domestic worker, or one who follows a professional calling, is very large. This matter has acquired an additional significance by reason of our new laws regarding compensation for diseases contracted by workmen due to accident. In Australia men working at the wheat stacks have developed skin affections evidently connected with the fact that the stacks were infected by mice suffering from mycotic diseases, including favus. According to Dr. White's view expressed in the opening chapter, these men are suffering from accidental diseases and have every right to obtain compensation under the workmen's compensation acts.

The number of dermatoses which may be regarded as of accidental or occupational origin, is so great that one wonders under what heading they were previously classified.

Dr. White's book is divided into ten chapters and the headlines of each of these chapters, should be a great help to the medical practitioner in his endeavours to locate any special occupation disease. The question of how far occupational skin affections are "accidents" from the point of view of the insurance societies, may give rise to mueh difference of opinion. The diagnosis of occupational dermatoses therefore becomes a very important matter.

In Chapter 2 the ætiology of these conditions is referred to, *viz.*, the "catchment points" of the skin surface.

These are the stomata and the hollows between the ridges. The irritating material finds a lodgement more readily in these parts and the first signs of inflammation of the skin are to be found in these situations.

There is a good deal of reference to dermatoses occurring in munition workers due to new chemical substances used in connexion with the manufacture of high explosives, etc., during the war. In order to lessen the opportunity for irritating matter lodging in the dermic stomata, it is recommended that some blood insoluble ointment should be used prior to work.

Dr. White's book contains many valuable suggestions connected with the treatment of these skin affections.

The book is well illustrated; some of the reproductions depicting the alterations occurring in the skin are excellent.

The index of subjects at the end of the book is a very extensive one and should be of great value to anyone looking up information concerning this class of occupational dermatosis.

[1] Occupational Affections of the Skin: Their Prevention and Treatment, with an Account of the Trade Processes and Agents Which Give Rise to Them, by R. Prosser White, M.D., M.R.C.S.; Second Edition; 1920. London: H. K. Lewis & Co., Ltd.; Demy 8vo., pp. 360, illustrated by 24 plates. Price, 25s. net.

DRAMATIC SURGERY.

In reviewing the third volume of Doyen's "Surgical Therapeutics and Operative Technique,"[1] English Edition, prepared in collaboration with H. Spencer-Brown, we must in fairness to the author remember that the work is really a pre-war treatize, although it bears the date 1920.

A careful perusal of the sections devoted to the surgical treatment of the various abdominal organs, the genito-urinary tract, male and female, and the section on gynæcological surgery, impels us to the conclusion that Doyen's methods as laid down in this book compare most unfavourably with the best surgical work of to-day. A few references will suffice to illustrate this. Under the heading of inguinal hernia it is stated that: "Operation in the female subject only requires five or ten minutes to be finished successfully." In dealing with femoral hernia, the method described by Doyen is obsolete. All the work is to be done below the level of Poupart's ligament, not above it. Under the caption "Operations upon the Liver and Bile Passages," the directions are vague, the methods employed are crude.

The same remarks apply to the chapters devoted to the surgery of the stomach. Under the heading of "Cancer of the Stomach" (page 231) we are told that: "As long as there are no symptoms of obstruction, surgical intervention is contra-indicated and the patient should be treated by injections of cytolase." Comment on this is needless.

The contents of the pages devoted to the technique of operations on the intestines reveal how far inferior and out of date Doyen's methods were as compared with the present-day practice of abdominal surgery. This applies especially to the treatment of cancerous growths of the large intestine.

Much space is given in the section dealing with gynæcological surgery to the operation of vaginal hysterectomy as applied to cases of infective salpingitis, uterine fibroids and carcinoma of the uterus. Doyen apparently preferred the vaginal route to the abdominal route, thereby sacrificing freedom of access and full command of the field of operation. In cases of *carcinoma uteri* the vaginal operation should be regarded as obsolete.

Doyen's description of Alexander's operation simply makes one shudder. There is throughout a reckless disregard of surgical anatomy and a superabundance of meticulous detail as to Doyen's methods and "the author's" special instruments and appliances.

The book is useless to the really up-to-date and scientific surgeon and would prove to be positively harmful if placed in the hand of senior students as a textbook. There is a lamentable failure throughout the work to emphasize the fact that good surgery must be based upon sound anatomical and pathological knowledge and a clear recognition of correct general principles as at present known and accepted.

The illustrations as such are good. Many of them are, however, semi-diagramatic and misleading; others, evidently from photographs, are useless from a teaching point of view. The numerous pictures of the "the author's" special instruments could well have been omitted.

The volume, from the publisher's standpoint, is excellently produced.

[1] Surgical Therapeutics and Operative Technique, by E. Doyen, English Edition, Prepared by the Author in Collaboration with H. Spencer-Browne, M.B., etc., Volume III.: Surgery of the Abdomen, Pelvis and Genito-Urinary Organs; 1920. London: Baillière, Tindall & Cox; Large Royal 8vo., pp. 811, with 959 illustrations. Price, 45s. net.

Notes on Books.

Messrs. Burroughs Wellcome & Company have again issued their admirable "Photographic Exposure Record and Diary," an inexpensive annual production of great value to photographers. The 1921 edition is an improvement on its predecessors in that the exposure calculator has been simplified and other matters have been extended and improved. This little book contains a wealth of information on the practical aspects of photography, including development, intensification, reduction, printing, colour photography, copying and staining. The most important chapter is that

dealing with the subject of exposure. The Wellcome Exposure Calculator enables the amateur to find the correct exposure for any ordinary picture he desires to take. It is easily worked and involves no calculation and very little reference. There is a considerable demand for this publication and, as the edition is limited, intending purchasers should send in their orders without loss of time.

Naval and Military.

APPOINTMENTS.

The following announcements have been published in the *Commonwealth of Australia Gazette*, No. 6, of January 13, 1921:—

Australian Military Forces.

First Military District.

Australian Army Medical Corps—

Major (Honorary Lieutenant-Colonel) A. M. McIntosh, to be transferred to the Australian Army Medical Corps, 2nd Military District, with Corps seniority, as from date of transfer, 1st October, 1920.

Australian Army Medical Corps Reserve—

To be Honorary Captain—Archibald Warden Graves Murray, 16th December, 1920.

Reserve of Officers—

Honorary Captain L. M. Pigott to be granted the temporary rank and pay of Major whilst employed at No. 27, Australian Auxiliary Hospital, 6th October, 1920.

Unattached List—

Captain (Honorary Major) E. R. Row, to be transferred to the Reserve of Officers, 16th December, 1920.

Second Military District.

Australian Army Medical Corps—

Major (Honorary Lieutenant-Colonel) A. M. McIntosh to be transferred from the Australian Army Medical Corps, 1st Military District, and Major R. Fowler, O.B.E., to be transferred from the Australian Army Medical Corps, 3rd Military District, with Corps seniority, as from date of transfer, 1st October, 1920.

Captain A. R. H. McLeod to be transferred to the Reserve of Officers, 15th October, 1920.

Australian Army Medical Corps Reserve—

To be Honorary Captain—Burton Gregory Wade, 1st June, 1915.

Reserve of Officers—

Captain (Honorary Major) L. R. Cook to be transferred from the Australian Army Medical Corps, 3rd Military District, and to be Major, 16th December, 1920.

Captains R. L. Poulton, W. K. Flook, and C. R. Wiburd to be granted the temporary rank and pay of Major whilst employed at No. 4 Australian General Hospital, 6th October, 1920.

Third Military District.

Australian Army Medical Corps—

The resignation of Captain (Honorary Lieutenant-Colonel) C. E. Dennis, O.B.E., of his commission is accepted, 30th November, 1920.

Major R. Fowler, O.B.E., to be transferred to the Australian Army Medical Corps, 2nd Military District, with Corps seniority, as from date of transfer, 1st October, 1920.

Major W. G. D. Upjohn, O.B.E., to be transferred to the Reserve of Officers, and to be Lieutenant-Colonel, 16th December, 1920.

Captain (provisional) H. Rogerson to be transferred to the Reserve of Officers, and to be Honorary Captain, 16th December, 1920.

Captain (Honorary Major) L. R. Cook to be transferred to the Reserve of Officers, 2nd Military District, and to be Major, 16th December, 1920.

Unattached List—

Captain (Honorary Major) R. W. Hornabrook and Captain S. H. Seccombe to be transferred to the Reserve of Officers, and to be Majors, 1st December, 1920.

Major D. A. Shields and Captains F. J. Pacey, J. L. E. Somers, M. A. Reid, A. E. Syme, C. W. H. Fleming, G. J. Ley, J. R. Lee, F. E. Littlewood, W. B. Docker, P. H. Liddle, F. A. Newman, P. H. Lang and W. F. Orr, to be transferred to the Reserve of Officers, 1st December, 1920.

Fourth Military District.

Australian Army Medical Corps Reserve—

Captains (Honorary Lieutenant-Colonels) J. Corbin and F. H. Makin, and Honorary Lieutenant-Colonels T. G. Wilson and A. M. Cudmore, to be transferred to the Reserve of Officers, and to be Lieutenant-Colonels, 1st July, 1920.

Captain (Honorary Major) J. W. Browne; Honorary Majors B. Smeaton, C. F. Pitcher, D. de C. Browning, E. W. Griffiths and D. M. Steele, M.C.; and Honorary Captains D. L. Barlow, M.C., and J. R. Muirhead, D.S.O., to be transferred to the Reserve of Officers, and to be Majors, 1st July, 1920.

Honorary Captains K. C. Godfrey, H. Gilbert, W. A. James, W. M. Sinclair, H. F. Dunstan, R. A. Haste, O. Leitch, E. V. R. Fooks, G. H. Black, G. S. Shipway, J. E. McGlashan, M.C., S. E. Holder, F. S. Scott, D. Parkhouse, L. G. Muirhead, R. Godson, A. K. Gault, F. H. Beare, H. W. B. Cairns, N. B. Hall, B. R. Moore, E. L. Symons, G. H. Burnell, C. W. Stump, E. E. Broadbent, A. R. Bean, A. C. Wilton, R. J. Verco, G. Brown, F. M. Willcox, P. Cockburn, H. F. Dunstan and E. F. Harbison, to be transferred to the Reserve of Officers, and to be Captains, 1st July, 1920.

Sixth Military District.

Reserve of Officers—

Honorary Captain H. W. Franklands to be transferred from the Reserve of Officers, 3rd Military District, 1st December, 1920.

THE MÜLLER MEDAL.

The announcement was made at the meeting of the Australian Association for the Advancement of Science on January 17, 1921, to the effect that the Müller Medal has been awarded to Mr. R. T. Baker, Curator and Economic Botanist at the Technological Museum, Sydney, and to Professor Chilton, of Otago, New Zealand. Mr. Baker has gained eminence through his careful and ingenious researches in botany and more particularly through his researches on the eucalypts. Professor Chilton has contributed a number of important articles on geological subjects. No award has been made since the year before the war.

THE OPTICIANS BILL IN WESTERN AUSTRALIA.

During the month of November a bill for the registration of opticians, which had been introduced by the Honourable J. Nicholson into the Legislative Council of Western Australia, was debated at a considerable length. The second reading was secured on November 23 by a majority of seven. The only Minister whose vote was recorded, opposed the measure, as did the Honourable A. J. H. Saw. On the following day, on the motion of the Honourable J. Nicholson, the Bill was referred to a select committee, consisting of the Honourable A. J. H. Saw, the Honourable J. Cornell, the Honourable A. H. Panton, the Honourable R. J. Lynn and the Honourable J. Nicholson, with power to call for persons, papers and records. This Committee was to have reported to the Council on December 7, 1920. On that day and on certain subsequent days an extension of time was granted. The Committee stage will probably be postponed for a short time.

Cloth cases for binding *The Medical Journal of Australia* of standard pattern and with standard lettering can be supplied at four shillings each. Orders should be sent in to the office of this *Journal* as soon as possible, in order to insure delivery early in January.

The Medical Journal of Australia.

SATURDAY, JANUARY 22, 1920.

A Retrospect.

IV.

Pædiatrics.

The record of the year's work in pædiatrics is singularly devoid of new ideas. Considerable advance, however, has been made by the registration of practical results by clinicians of experience. In connexion with the question of syphilis, the luetin test (intra-cutaneous injection) seems to have gained preference over the Wassermann test; it is said to be more reliable in congenital syphilis. Further studies on the administration of mercury controlled by the measurement of the mercury excreted in the urine, have shown that inunction with a 50% mercurial ointment yields the best results. It is held to be advisable to use calomel ointment in the same concentration. Mercuric chloride is said to be unsuitable for hypodermic injection. As grey powder is rapidly absorbed and excreted, it should be given daily in full doses. There appears to be a wide divergence of opinion concerning the best manner of exhibiting the arsenical preparation in congenital syphilis. Some advocate weak dilutions, such as 1 in 200, while others prefer solutions ten times this strength. Again, some clinicians give daily, while others give weekly doses.

In diphtheria the value of toxin-antitoxin injections controlled by the Schick test as a prophylactic measure has been demonstrated in several institutions. There has, however, been no definite improvement in the general mortality rate.

Many reports have been published dealing with the prophylactic and curative use of pertussis vaccine. All these reports have been favourable. Large doses are essential. The initial dose usually given is 150 millions. The injections are repeated every two or three days.

Claims have been made that *arthritis deformans* is caused by a specific infection of the tonsil and naso-pharynx. In accordance with this alleged ætiology, the treatment resolves itself into operation on the tonsils and on the several nasal sinuses and the use of vaccines.

Several authors have claimed to have obtained good results with thick cereal feeding in infants and young children suffering from gastric troubles. The same treatment is employed both in early and in late infancy in pyloric stenosis, neurotic vomiting, malnutrition without vomiting and colic. In all spasmodic conditions of the bowel, including megalocolon, which is alleged to be due to spasm and subsequent hypertrophy following on over-feeding with starch, atropine in large doses has yielded excellent results.

Of recent years ultra-conservative dentistry has been in vogue for children. It now appears that both medical practitioners and dentists are relinquishing this position. The recognition that many ailments are caused or profoundly influenced by sepsis in teeth and the fact that it is impossible to guarantee the arrest of a septic process in a tooth have impelled practitioners to insist on the extraction of infected teeth much more frequently than formerly.

Various ailments have been grouped under the heading allergy in infants. These conditions are stated to be produced by a congenital or acquired hypersensibility to a foreign protein. In the severe forms the condition is manifested by urticaria, angio-neurotic œdema and asthma associated with the symptoms of shock. In less severe forms bronchial asthma, urticaria, angio-neurotic œdema, *erythema multiforme*, eczema, acute dermatitis, gastro-intestinal disorders in infants and cyclical disturbances in children are seen. The treatment consists in the elimination of the offending protein from the diet, the desensitization of the patient by hypodermic injection of the protein and the immunization of the patient by feeding with gradually increasing quantities of the protein, beginning with minimal quantities, until tolerance is established. In many cases the protein is derived from one of the pollens.

Orthopædic Surgery.

In the realm of orthopædics the treatment of deformities and disabilities following peripheral nerve injuries has been the most widely discussed subject during the year. A review of the end results of secondary nerve suture appears to demonstrate that satisfactory results are obtained in about one half

of all cases. The percentage of perfect restoration of function is very small. One orthopædic surgeon recently recorded that he had not experienced a single case in which the physiological result from a neurological point of view had been good in a large series of cases. End-to-end suture, however, has proved a highly beneficial procedure. Nerve transplantation to fill a gap in peripheral nerves is still on trial. Huber has succeeded in demonstrating new nerve fibres in the sciatic nerve of the dog distal to a graft bridging a space of three centimetres. It has yet to be determined how a sufficient number of fibres can be obtained into the distal segment of a divided nerve to provide a useful function. Huber has also shown that the injection of alcohol into the proximal segment of a divided nerve after amputation minimizes the risk of the formation of neuromata. F. A. Hartman and W. E. Blatz studied the effect of after-treatment of muscles in injuries to nerves. They have found that neither electrically-produced contractions nor massage has any beneficial effect in delaying atrophy or in hastening recovery.

A considerable advance has been achieved in the treatment of *pes cavus* by Sharman, Hibbs and Steindler. Each of these surgeons describes an operation, the essential part of which is the sub-periosteal stripping of the muscular and ligamentous attachments from the inferior surface of the *os calcis*. This allows the anterior portion of the foot to be lifted upwards and outwards.

The causation of obstetric paralysis continues to attract the attention of orthopædic surgeons. The balance of opinion appears to be in favour of the hypothesis that the paralysis is due to mechanical stretching of the nerve roots. Sever was able to produce macroscopical rupture of the upper roots of the brachial plexus in the infantile cadaver. In a large proportion of his experiments, however, the lesion was rupture and fraying of the fibres within the intact sheath.

Royal Whiteman has drawn attention to the efficacy of the abduction method of treating fractures of the neck of the femur and central luxation of the femoral head. The orthodox treatment of dislocation of the shoulder joint often leaves undesirable limitation of movement, particularly in abduction. With the object of obviating this, Alan Todd has treated a number of patients suffering from this injury by means of an abduction splint. The idea is anatomically correct. From the record of his experience, it would seem that much better results are obtained by this expedient than by the ordinary method of treatment.

Urology.

The year 1920 may be regarded as a year of accomplishments in the sphere of urology. Reports have been published descriptive of the late results of the high frequency treatment of papillomata of the bladder. The early expectations are being fulfilled. Experts are now unanimous that it is unjustifiable to use any other method of treatment when high frequency current is available, save under very exceptional circumstances.

Much patient work has been carried out in connexion with the treatment of malignant disease of the prostate and of the bladder by means of radium and its emanation. In cancer of the prostate the best results seem to be obtained by implantation into the prostatic tissue of capsules of emanation. There are many instances on record to show that growths are at times arrested in this way. In a few cases retrogression has been observed. The position of these prostatic malignant growths appears to be favourable to this form of treatment, but much careful work remains to be done before a final decision can be declared. The prospect of cure in cases of infiltrating malignant growths of the bladder continues to be unsatisfactory. A few favourable case reports have been published, but they cannot be regarded as convincing. The majority of authorities hold the opinion that actual contact between the radium and the growth is necessary for good results.

A valuable article has appeared on the incidence of purpura of the urinary tract. This condition was observed in soldiers of the British Expeditionary Force and of the other forces in France. The same condition has been observed in civil practice in Australia. It is characterized by acute onset, irregular fever, vesical tenesmus, hæmaturia, cylinduria and diminished renal function. The disease commonly runs a prolonged course with occasional acute exacerbations. It is stated that the urine is sterile. This

probably means that no pathogenic or saprophytic bacteria have been isolated from the urine by the ordinary methods of examination. Hæmorrhages occur in the mucous membrane of the bladder and from the kidney, but no visible inflammatory changes have been observed.

A novel suggestion has been made in regard to the treatment of hæmaturia occurring in conditions which are not usually treated by operative means. It is to inject into the renal pelvis through a ureteral catheter a 5% solution of silver nitrate. It is held that the method, though drastic, is justifiable when the bleeding is so severe that the removal of the kidney might otherwise be necessary. The results are said to be satisfactory.

Young has described an operation for the closure of urethro-rectal fistula. The operation is based on the principle of Whitehead's operation. We understand that in the experience of surgeons who have practised this operation, it is a valuable procedure. Bucknall's operation for hypospadias is again finding favour among surgeons. It is now held to be one of the best measures for the cure of peno-scrotal hypospadias. No mention of this operation is made in the majority of modern text-books and it would seem as if it had been allowed to pass into desuetude.

Much attention has been devoted to the operative treatment of tuberculous epididymitis. The technique of complete epididymo-vasectomy with conservation of the blood supply of the body of the testis has been improved. Opinions are divided as to whether or not a piece of the opposite *vas deferens* should be removed. Although the subject is still *sub judice*, it would appear from theoretical considerations that this procedure is probably useless as a prophylactic measure.

Further proof, if any were required, that formaldehyde cannot be liberated *in vivo* from any known drug except in an acid medium, has been supplied by the results of experiments with anhydrous methylene citric acid. Drugs, such as cystopurin, helmitol, citarin and the like which have an alkaline base and thus tend to reduce the acidity of the urine, are therefore useless, except in so far as their alkali content may tend to diminish the urinary irritability. Bicarbonate of soda would be equally efficient.

A series of experiments on dogs has demonstrated that the urine of these animals has a selective germicidal effect on *Bacillus coli* when the dog is being fed on a diet rich in animal protein. The action is not present when the diet consists of bread and milk. The significance of this has not yet been elaborated.

Radiology.

The transformer type of apparatus for use in conjunction with the self-rectifying Coolidge tube has been improved during the year. For medium outfits, where an alternating current supply is available, this form of apparatus should be of great value and the cost of upkeep very low. Coolidge has invented a small 6.25 cm. tube for use with portable sets.

Little advance has been registered in diagnostic radiology. Much work has been carried out in connexion with the technique for the detection of gallstones. This method of diagnosis, however, is still far from accurate. Various workers are gradually giving up the so-called "symptom complex" in the diagnosis of gastro-duodenal lesions and are relying more and more on the actual demonstration of the ulcer crater or of the deformity caused by the ulcer or neoplasm. The endeavour to demonstrate the defect caused by the lesion necessitates the employment of the heaviest apparatus for the diagnosis of affections of the stomach or duodenum.

Among the more important matter dealt with in the realm of radio-therapy is that of the treatment of uterine fibroids. Good results are being obtained. The French school favours small doses of highly filtered rays at short intervals; the American school advocates massive doses of highly filtered rays repeated at intervals sufficiently long to insure the integrity of the skin. A twenty-five centimetre spark gap with a four millimetre aluminium filter is used and numerous ports of entry are mapped out on the surface of the abdomen.

Exophthalmic goître with well-marked nervous symptoms yields rapidly to radiation, but cystic goître is uninfluenced. The nervous symptoms disappear, even though the goître itself may remain large in size.

Preliminary irradiation of the chest, axillary and supra-clavicular regions before the radical operation for cancer of the breast has been widely practised. Most encouraging reports have been received from

many quarters. It is stated that this procedure is followed by freedom from recurrence after many months in cases in which formerly recurrence would have been considered inevitable.

During the war use was made of X-rays for the examination of aeroplane timbers and small castings. Although the results in timber examination have been uniformly good, the results attained in the examination of metal castings have been disappointing. Even with the hardest tubes in existence, the X-rays can penetrate only a small thickness of metal.

Morphology.

Useful additions to knowledge in morphology, including comparative neurology and experimental zoology, have been made during the past twelve months. Attention has been directed toward the elucidation of the mysteries of the thyreoid and parathyreoid glands, particularly in regard to their influence on growth and development. The function and correlation with other glands of the sexual organs, as well as the problems of the determination of sex and the transmission of sexual characteristics have provided a wide field for observation and experiment. There are indications that in the near future definite and valuable information on these subjects may be forthcoming.

The factors influencing heredity and the transmission of chance or induced defects through several generations have been studied with great care. Fresh evidence has been adduced in support of the contention that an acquired character can, under certain conditions, be transmitted. The results of these studies indicate that the facts concerned may have a far-reaching and important practical application.

A considerable amount of experimental work has been performed in connexion with the brain, particularly of the albino rat. Information concerning the central connexions of the fifth nerve, the growth of the neurones of the Gasserian ganglion and the origin of the ganglionic cells of the *nervus terminalis* has been accumulated. The investigation of brain weight has involved a vast amount of work for comparatively little useful result.

Interesting information has been disclosed regarding the habits, as well as the anatomy, of many of the lesser members of the animal kingdom, such as the migration of frogs at breeding time and their methods of sex recognition, the significance of the crystalline style in molluscs, the various modifications from the mammalian type which fit the mole for its underground habits, the factors influencing egg-laying in flies, the types of intermuscular nerve cells of earthworms, etc., etc..

THE DEVELOPMENT OF THE NEURONE.

A full understanding of the nature of the changes in the nerve cell, in the various elements of the neurone and in its connexions in pathological conditions of the central nervous system is not possible without complete knowledge concerning the physiology of each element, by which we mean knowledge concerning the manner of its development, its chemical composition and chemical functions, the biophysics of each element in relation to its environment and the inherent powers of each part to react to intrinsic and extrinsic agents. The chemistry and physics of the neurone are so inseparably bound together that it is impossible to investigate the one without the other. Recent researches would further show that the developmental processes depend largely on chemical and physical responses, although the more mysterious biological aspect must necessarily exercise a great phylogenetic influence. Anatomists and physiologists have been compelled to accept the fact that the nerve cell appears in its peculiar position; the method of selection of the situation of the laying down of the cell is at present impossible to fathom. Certain phenomena connected with the development of the neurone, however, have been observed and many attempts have been made to find an adequate explanation for them. These phenomena include the shifting of the cell from its developmental site to a new location where it apparently can exercise its functions to better advantage, the growth of dendrites in varied but definite directions and the growth of the axis cylinder in a single and definite direction. The formation of bundles of fibres, the investment of certain fibres in medullary sheaths, the final joining up of the fibre with the end organ are among other phases of growth which have to be understood if we would endeavour to investigate the changes of degeneration and of regeneration. At one time it was thought that the mechanism of the outgrowth of new fibrils into the distal portion of a divided nerve would be the same as that of the first formation of the neurone and the penetration of the axones from the nerve cell to the end organ. It is now held that the two processes are essentially different. The elder His endeavoured many years ago to produce a mechanical explanation for the general arrangement of the axones. Held postulated performed paths along which the axis cylinders grow in accordance with the law of least resistance. Ramon y Cajal built up an ingenious theory of chemiotaxis. None of these explanations satisfied the primary conditions, namely the provision of a record of cause and

effect. Moreover, it was soon shown that the processes involved were not governed by mechanical laws, that the assumption of preformed paths was fallacious and that the general principles of chemiotaxis did not apply in the determination of the development of the nervous elements. Many investigators sought the aid of comparative anatomy and physiology with a view to the discovery of essential facts which might throw light on the underlying factors. Professor C. U. Ariëns Kappers was the first to assemble all the facts and his patient and highly ingenious researches have enabled him to formulate a hypothesis which may be regarded as one of the most important advances in our knowledge of the nervous system of recent times. His observations and deductions have been published in several journals, among which the following may be mentioned: *Folio Neurolobiologica, Psychiatrische en Neurologische Bladen, Journal of Physiology, The Journal of Comparative Neurology* and the *Journal of Nervous and Mental Diseases.* The dates of publication lie between 1907 and 1919. While the hypothesis is complicated and involves a mastery of chemical and physical science for proper appreciation, an attempt is made in the following paragraphs to summarize the essential points in a clear and readily understood form.

The nerve cells of the *medulla oblongata* undergo a shifting from their original situation to one of better physiological advantage. This has been demonstrated in connexion with the motor nuclei in a very large number of animals of different species. Professor Ariëns Kappers points out that the shifting is always in the direction toward the source of stimuli. Observations on plants and unicellular animals have demonstrated that root tips of sprouting seeds or tentacles of certain animals when exposed to a weak constant current turn and grow toward the kathode. This is termed kathodic galvano-tropism. The direction can be reversed by immersing a protozoon in stronger salt solution. The root tips of the bean seed continue to grow toward the kathode when the water through which the galvanic current is passed contained 0.074% of potassium chloride. Anodic movement is observed when the salt is increased in strength up to 1%. Another physical phenomenon that has a bearing on the problem of the nerve cell is that of kataphoresis. When albumin in solution in an alkaline medium is subjected to the influence of a constant current, the particles are shifted toward the anode, while when the solution is rendered slightly acid, the shifting is toward the negative pole. The nerve cell forms a kathode in its relation to the surrounding elements and thus represents an anodic field active to the source of stimulation. According to Professor Ariëns Kapper's hypothesis the outgrowth of the axis cylinder is determined partly by kataphoresis on account of the anodotropic character of its protoplasm. Moreover, it has been shown that there is a greater concentration of potassium chloride in the immediate environment of the axone than in any other part of the neurone. Consequently the axis cylinder grows in the direction of the stimuli toward the anode. At a later period the nerve cell itself shifts toward the centre of stimulation, while the dendrites grow in many directions. Here the concentration of potassium chloride is low. The protoplasm of the perinuclear tissue and the granules known as Nissl's bodies consist largely of nuclear acid derivatives. The result of this set of conditions is kathodic kataphoresis and stimulo-petal movement of the whole cell and of its constituent protoplasm. As far as the nerve cell itself is concerned, the direction of its movement will be toward the centre of stimulation, which acts as the kathode to the cell. The current emanating from the small protoplasmic projections of the cell run at right angles to those portions of the surface of the cell on which the stimuli fall. Consequently the dendrites are multiple and grow in various directions. The shifting of the cell and the growth and subsequent shortening of the dendrites do not occur until the axis cylinder is approaching its ultimate destination. It is held that the phenomena of kathodic stimulation are best exemplified when the elements are developed and consequently susceptible to stimulation.

From this brief, general account of the suggested reasons for the development of the neurone it will be gathered that an explanation is offered for the institution of axone growth, for the fact of monaxonism, as contrasted with poly-dendritism, and for the approximation of the motor nucleus nerve cell and the elements from which its particular stimuli proceed. There still remains the final stage in the construction of a functional neurone, namely the connexion with the tissue cell to which it lends physiological activity. This goal of the axone is always a cell with correlated activity. It is stated with apparent justification that the ultimate cell has a simultaneous electrolytic dissociation with the nerve cell and with the prolongation axone. Other cells not attuned to the same stimuli or possibly not stimulated at all, possess no attraction to the axone or other part of the neurone, nor are they influenced by the current flowing from the nerve cell. Professor Ariëns Kappers regards these other centres or cells as *corpora aliena*, foreign bodies, to it. Concerning the phenomenon of the formation of the medullary sheath of the axis cylinders, the learned Professor points out that in the process of anodic kataphoresis the particles of albumin or lecithin are drawn toward the anode when they are bathed in an alkaline medium. It has been shown by Hermann that the movement of myelin toward the anodal pole of the nerve is a very striking one. The myelin can be made to be re-absorbed by a reversal of the current. It requires but little imagination to picture the mode of envelopment of the axones by lecithin or other proteid substance in the direction of the end point, that is toward the anode. If there is any movement of lecithin to the outside of the early axis cylinders in the neighbourhood of the nerve cells, its removal would certainly be facilitated by the kathodal galvanotropism. It is not clear why the accumulated lecithin forming the medullary sheath around the peripheral fibres remains limited to the immediate neighbourhood of the axone. We have omitted several minor but still important pieces of evidence in the construction of the hypothesis, such as the work of Bok on the formation of axones by

the activation of neuroblasts by ordinary stimuli. Many of the facts recited by Professor Ariëns Kappers strengthen his argument. Want of space and a desire to present this subject in as simple a form as possible have impelled us to make these omissions. For the present we may accept the hypothesis as the true explanation of the mode of development of the neurone.

CULTIVATION OF THE GONOCOCCUS.

Many modes of cultivation of the gonococcus have been devised since Neisser first described the organism in the year 1879. Though readily demonstrable in smears taken from the urethra or cervix of persons suffering from gonorrhœa in an acute stage, the gonococcus is notoriously difficult to grow on laboratory media and in spite of claims by many bacteriologists that in their hands the organism is capable of a more lusty growth, the difficulty remains unsurmounted. This latter statement may, however, need revision in the light of a claim recently put forward by Drs. Ernest O. Swartz and David M. Davis, of Baltimore.[1] These observers claim to have evolved a cultural method which is simply conceived and easily performed and which cannot fail. They say that by their technique they have made thousands of cultures and have never failed to obtain a growth. They have successfully made primary cultures in every case in which gonococci could be found in smears. They use a 2% veal infusion agar medium, whose hydrogen ion concentration is expressed, according to Sörensen's formula, as pH 7.6, phenolsulphonephthalein being the indicator used in the colorimetric estimation. After sterilization of the medium the reaction becomes pH 7.4. While the agar is still in melted state, sterile ascitic or pleuritic fluid or fluid from a hydrocele is added in the proportion of one part of fluid to two parts of agar. Tubes containing the medium are then plugged with rubber corks and slanted. When it is required to inoculate a slope with the suspected organism, the medium is brought to the body temperature. Immediately following inoculation the tube is held by the butt and passed longitudinally through a Bunsen flame two or three times and then rapidly corked. The rationale of this procedure follows from a consideration of the work of Drs. Wherry and Oliver who maintained some years ago that the gonococcus grows best in an atmosphere with a lowered oxygen tension. It is claimed that this procedure lowers the atmospheric pressure within the tube by about 10% (70 to 100 millimetres of mercury), thus reducing the oxygen tension and facilitating the growth of the organism. Visible colonies are said to appear in twelve to fifteen hours and profuse growths in twenty-four hours.

The method has in its favour that it is an epitome and improvement of the methods described by several bacteriologists. There is nothing original in the mode of preparation or in the substances used. Other workers will thus more readily estimate the value of the claims put forward. Drs. Swartz and Davis are also on stronger ground, since they can compare their technique and results with those of the investigators who preceded them. It should not be long before the method runs the gauntlet of practical criticism in other workers' laboratories. Meanwhile we may be pardoned if we exhibit a little scepticism. The ripeness of time will prove whether the results claimed are justified. In the authors' own words, numerous culture methods have been described, each being used with greatest success only by its originator. It is not unknown that an investigator has isolated a Gram-negative diplococcus which he grew readily and wrongly held that it was a gonococcus. Mr. Sydney Cole and Dr. Dorothy Lloyd, who prepared translucent agar media for the cultivation of the gonococcus and claimed good results some years ago, admitted that in the course of their investigations they isolated a diplococcus from a urethral discharge, which they fondly imagined was the gonococcus. It grew freely on nutrient agar. When the organism was subjected to fermentation tests, their enthusiasm was dispelled. The diplococcus readily fermented sucrose and maltose, whereas the gonococcus ferments glucose and galactose.

The paper by Drs. Swartz and Davis is only a preliminary note and we are promised a detailed statement later on. We are also promised new and original observations on the cultural characteristics of the organism. We hope that fermentation reactions in glucose, maltose and sucrose will be described so as to place beyond doubt the identity of the organism. Unless this be done, the results claimed are open to grave doubt. But if these necessary precautions have been carried out, bacteriologists will welcome the new cultural method. They will also be able to determine to their satisfaction whether the claims made for the new method are or are not justified.

[1] *Journal of the American Medical Association*, October 23, 1920.

THE INSANE IN SOUTH AUSTRALIA.

Dr. Bedlington H. Morris, the Inspector-General of Hospitals, has issued his annual report for the year 1919 on the Mental Hospital at Parkside and the Certified Mental Defectives. This report has been published, as usual, together with the Report of the Mental Defectives Board. The information contained is set out to a very large extent in tabular form. In his first annual report, published in 1915, Dr. Morris dealt in some detail with the problems of his Department. In the succeeding reports the introduction has been gradually shortened and stereotyped. We are not convinced that the elimination of the descriptive chapter in the course of which the progress made and the difficulties to be overcome are reviewed, is an advantageous procedure. The following facts and figures are gleaned from the report and the appendices. They do not, however, exhaust all the information contained.

On the last day of the year 1918 there were 1,123 persons in the Mental Hospital. On the last day of 1919 this number had increased to 1,187. During the 12 months 277 persons were admitted to the Hospital and eight were returned from trial. The total number of those admitted represents 6.09 per 10,000 of population. The ratio was 7.25 for males and 5.03 for females. If the admission rate be accepted as an index of the frequency of insanity, South Australia and Western Australia would occupy the middle position between good and bad. The highest rate is in New South Wales, with Queensland not far behind, while Tasmania enjoys the lowest rate and Victoria is but little less favourably situated. The total number of patients discharged during the year was 157, of whom 83 males and 61 females

were supposed to have recovered. The number of deaths during the year was 94.

A highly interesting table is published, showing the number of persons admitted, discharged recovered, discharged not improved, discharged because not insane and who had died since January 1, 1846. Unfortunately, the figures have reference to admissions and not to individuals. It would be very useful if a column could be added, giving the number of re-admissions or, still better, if in the admission column the number of those who had been in Parkside or some other mental hospital on a previous occasion, was eliminated. It appears that in the course of 74 years 11,894 persons were admitted or re-admitted. The number of deaths was 3,967, which represents 33.32% of the total number. This percentage has been calculated on the average number of persons resident in the hospital and is therefore not the best method of statement. The number of persons who were discharged as recovered, was 6,449. The only indication given of the number of persons who were admitted to Parkside more than once is found in the statement "percentage of admissions who were relapsed cases" (we presumed that Dr. Morris means patients or persons) was 15.95. This would indicate that 1,896 persons relapsed after discharge and had to be re-admitted. It is not clear, however, whether the remaining 9,998 persons were admitted to Parkside without having been in this or in any other mental hospital on a previous occasion. If this be the case and if the 4,553 persons discharged recovered remained in perfect mental health, the recovery rate would be 45.5%. It is interesting to note that in the course of so long a period as 74 years only two patients were discharged from the Hospital because the authorities found that they were not insane.

The growth of population in the Hospital has been quite steady. During the first 20 years only 183 inmates were housed on an average at one time. The 500 mark was reached in 1879, while in 1907 the average number exceeded 1,000 for the first time.

A little further light is thrown on the antecedents of persons admitted to the Hospital. In this case, unfortunately, the information is limited to those admitted during the year 1919. Of the 277 persons admitted presumably for the first time. (the admission is tabulated as new committals), seven were suffering from congenital affections, 139 from first attacks, 85 from not first attacks and in 40 instances it was undiscovered whether or not the attack was a first one. From these figures it will be seen that in 146 out of a total of 277 or slightly over half, no question could have arisen as to any previous admission to a mental hospital. On the other hand, there was definite cause in 31% for treatment during a previous attack. It would thus seem that the number of persons admitted during the 74 years should be still further reduced, possibly to 6,666, for the purpose of ascertaining the true recovery rate.

A very healthy sign is disclosed in a table setting forth the duration of the attack at the time of admission. It had lasted less than two weeks in 76 instances—that is, in well over one quarter of the cases. The attack had lasted less than six months in 192 cases or nearly 70%. A similar experience is recorded in the annual reports for 1916, 1917 and 1918, while the proportion of patients admitted during the first six months of the attack in 1915 was considerably smaller. A somewhat larger number of patients than usual was admitted late, namely three years or more after the beginning of the attack. Of the 85 persons who had had one or more previous attacks, 46 had had one, ten had had two and three had had three or more. It is unknown how many previous attacks there had been in the remaining 26. The age of the patients during the first attack at the time of admission is given in quinquennial periods. There were 139 patients in all and, of these, 19 were between 25 and 29, 18 were between 30 and 34 and 18 were between 35 and 39. The numbers varied during the six succeeding periods between six and thirteen. Fifteen of the patients were over 70 years of age. At the other end of life there was one less than ten years, five between 15 and 19 and five between 20 and 24.

Much interesting information is contained in the tables dealing with the form of mental disorder, with the alleged ætiological factors, the causes of death and with the duration of the insanity in persons who had died during the year. Brief references to some of these points are made by Dr. M. H. Downey, the Medical Superintendent of the Parkside Mental Hospital.

THE HEALTH OF SCHOOL CHILDREN IN QUEENSLAND.

It is not unreasonable to expect that the amount of space devoted to a special chapter of work in an annual report of a Governmental department is measured by the conception of the author of the relative value of that work. If this principle applies in the case of the annual reports of the Secretary of Public Instruction of Queensland, it becomes our duty of protest against the irrational evaluation of school hygiene and the work of preserving the health of school children. In the annual report for the year 1919, a bulky volume of 154 pages, half a page is devoted to medical inspection, while not one word is written concerning the subject of school hygiene.

The work of medical inspection was carried out by thirteen part-time medical inspectors, three in Brisbane and one each in Cairns, Charters Towers, Gympie, Ipswich, Mackay, Maryborough, Mount Morgan, Rockhampton, Toowoomba and Townsville. In the absence of a medical head of the Department, the general administration was in the hands of the Commissioner of Public Health. During the course of the year 13,913 children were examined and, of these, 2,296 were found to be suffering from physical defects. The number of children examined was 4,287 less than in 1918. The decrease is explained by the closure of approximately 1,000 schools during the influenza epidemic. It is stated that special treatment of ophthalmic affections in children resident in the western districts was carried out at 35 hospital centres. In other places the head teachers are supplied with ophthalmic outfits "by the aid of which they are enabled to adopt some simple or curative measures and thus minimize the danger of infection."

It will be seen from these scanty records that the Department of Public Instruction has failed signally and completely to carry out its duties to the community. The number of children attending the schools in 1919 was 121,299. Of these 11.4% were examined. Further, it will be noted that of the small number examined 16.5% were found to be defective. There is no indication in the report whether or not any steps were taken to apply remedial measures, save in the case of ophthalmic affections. If the proportion of defect were the same throughout the whole of the child community, defects demanding attention in 17,718 children remained undiscovered and, we assume, untreated. Even the thin excuse of the closure of 1,000 schools for a few weeks does not exonerate the Department, for the fault lies not with the part-time officers, but in the failure of the responsible authority to grasp the basic principle that health in children is far more important than education and that the future of Australia is endangered by the neglect to provide adequate machinery for the safeguarding of their health.

We have been asked to announce that Mr. W. D. Friend, a member of the Linnæan Society of New South Wales, of 42 Pile Street, Dulwich Hill, Sydney, is engaged in an investigation into the nature of the venoms of Australian snakes. This study necessarily embraces the study of the toxicology of the various forms of venom. He would therefore be greatly indebted to any practitioner who is called upon to treat a patient for snake-bite in a hospital, if he would afford him facilities for observation of the signs and symptoms. Mr. Friend would be prepared to travel to any part of New South Wales at short notice.

Abstracts from Current Medical Literature.

OPHTHALMOLOGY.

(26) Syphilis of the Optic Nerves.

Writing on the subject of syphilis of the optic nerves, Mark J. Schoenberg lays stress on the importance of early diagnosis of spinal and cerebral syphilis (*Arch. of Ophthalm.*, March, 1920). A watch for this should be maintained from the time when the primary lesion begins. The diagnosis of syphilitic optic atrophy must be made cautiously. Tobacco amblyopia, for example, may occur in a syphilitic patient and the mistake be made of relying on antisyphilitic treatment alone. Examination of the spinal fluid affords valuable information as to the onset of nervous syphilis and as to its character—whether meningitic or parenchymatous. Prompt and intensive or abortive treatment is valuable in preventing invasion of the central nervous system. If examination of the spinal fluid shows that there is actual infection of the nervous system, the patient is treated with intraspinal and intracranial medication. Experience has shown that this has decided advantages over general treatment. Before a patient is treated a clear idea should be formed as to whether a taboparesis, cerebro-spinal lues, or a vascular lesion is present. Inquiry should also be made concerning the stage of syphilis in which the optic pathway became involved. In papilloedema occurring during treatment with a course of salvarsan the indication is to continue persistently and cautiously, since the condition will clear up. It should be ascertained whether there is an active process going on. A partial atrophy which is stationary and is associated with no definite findings in the blood or spinal fluid should be watched, but not treated. Nine cases are reported in the article.

(27) A Case of Trigeminal Neuralgia.

Writing of the poor results from the surgical treatment of facial neuralgia, C. W. Stevens states that if a reasonable explanation of the cause of the neuralgia could be found and if removal of the cause could be accomplished without ill-effects, then the old surgical experiments might well be abandoned (*Arch. of Ophthalm.*, March, 1920). A clergyman, aged 29 years, suffered every two months from violent pain in the orbit, supraorbital region and parietal eminence. There were at times loss of consciousness, epileptiform seizures and mental derangement. His vision had been corrected for hypermetropia and astigmatism. Further examination revealed 2° of esophoria and with the clinoscope a declination of + 2° in the right and + 5° in the left eye had been found. For clear vision it is necessary to keep the eyes vertical and this demands the assistance of the facial muscles. Hence, in this patient both brows were strongly compressed, the left more than the right. There was a deep, depressed, vertical ridge between the eyebrows and prominent transverse wrinkles on the forehead. There was spasmodic contraction of the whole face. Three operations were performed to correct the declination in both eyes, resulting in complete cure of the neuralgia. The cause of the neuralgia was the abnormal pressure of the facial muscles on the supratrochlear and supraorbital branches of the ophthalmic division of the fifth cranial nerve.

(28) Treatment by Radium and X-Rays of Tumours of the Hypophysis.

After discussing the varieties of pituitary tumours, Douglas Quick calls attention to the high mortality and indifferent results from operative treatment (*Arch. of Ophthalm.*, May, 1920). Kanavel estimates the operative mortality at from 10% to 35%. Cushing confesses to a mortality of 10% in his own work. During the past few years X-rays and radium have been employed both as an aid to operative treatment and for the treatment of recurrences. Béclère reported four cases so treated with promising results and other surgeons write favourably. The author's experience is limited to three cases: (*i.*) The first patient, a woman of 31, had previously been operated upon by the nasal route. Five capillary tubes of radium emanation were embedded in the tumour, *viâ* the nasal passages. The headache and vertigo disappeared and the vision improved. The application was repeated eight months later. (*ii.*) The second patient, a woman, aged 37, had had no previous operation. A resection of the nasal septum back to the sphenoid bone was done and the sphenoidal sinuses were opened, but the floor of the *sella* was not removed. A tube of radium emanation was introduced, packed with gauze and left in for twelve hours. Eight months later radium was applied to both temporal regions. There was some improvement of the headaches and of the sight. (*iii.*) The third patient had radium buried in the tumour after operation. He died from meningitis. The author concludes that X-ray and radium therapy has much in its favour.

(29) Ocular Signs in Exophthalmic Goitre.

J. H. Clairborne offers an explanation of the various ocular signs of exophthalmic goitre (*Journ. Amer Med. Assoc.*, September 25, 1920). (*i.*) The most important sign is the proptosis, due to an excessive amount of blood in the orbit and to hypoplasia of the orbital structures. Most of the other signs result from the proptosis for mechanical reasons. (*ii.*) In Dalrymple's sign there is a separation of the eyelids with a strip of sclera visible above and below the cornea. It follows directly from the protrusion of the eye-ball. (*iii.*) Von Graefe's sign follows in consequence of Dalrymple's sign—as the eye is turned down slowly the upper lid lags behind the cornea. The band of sclera above the cornea becomes wider as the eye descends. (*iv.*) Stellwag's sign—infrequency of winking—is also a result of the proptosis, the cornea becoming less sensitive through exposure. (*v.*) Gifford noted great difficulty in everting the upper lid; this the author confirms. (*vi.*) Rosenbach's sign consists in a trembling of the upper lid when the patient closes the eye gently. It is caused by instability of the tone of the *orbicularis*. (vii.) The author records an observation of his own, *viz.*, that when the disease is advanced the pupils are almost always large, especially in patients with blonde complexions.

(30) New Operation for Dacryocystitis.

Meyer Wiener and W. E Sauer, after a brief résumé of the various methods of performing dacryocystostomy, describe their own procedure (*Journ. Amer. Med. Assoc.*, September 25, 1920). Without slitting the canaliculus, a Ziegler probe is passed into the lachrymal sac. The probe is directed to the bottom of the sac and at an angle of 45° is forced through the external nasal wall into the nasal cavity. The probe enters the nose in front of the middle turbinate bone. The opening made by the probe is enlarged upwards by small punch-forceps or chisel. A portion of the sac is pushed through the opening and removed with biting forceps. After three days probes are passed to keep the opening patent and granulations are kept down by the application of 40% silver nitrate solution. The after-treatment is important. In the discussion which followed, surgeons deplored the tendency of the opening to close. In consequence of this, some had reverted to the practice of removing the sac.

(31) Vernal Conjunctivitis.

W. H. Luedde contributes a long article on vernal catarrh or conjunctivitis, as he prefers to call it (*Archives Ophthalmol.*, January, 1920). The causes are discussed, namely, heat, hot, dry and dusty climate, possibly micro-organisms, individual predisposition and location, that is, its effects occur where the conjunctiva is firmly attached to its base, over the tarsus and at the limbus. The main point in his article is his statement that fibrolysin in a watery solution painted on the everted lids, will cure the condition. He has tried it successfully in nine cases. A drop of 1% holocaine previously instilled is desirable. He combines with fibrolysin treatment with weak solution of silver nitrate (0.3 to 0.2%).

(32) The Capsule in Cataract Extraction.

Edward Jackson emphasizes the fact that membranes which appear in the pupil after cataract extraction are not to be ascribed to the lens capsule or the lens epithelium (*Arch. of Ophthalm.*, May, 1920). They are composed of connective tissue which is furnished by the iris. It is an iritis, due to parts of the lens cortex lying free in the anterior chamber, which causes the after-cataract. This condition is, he considers, best prevented by a peripheral linear section of the capsule. Cortex within the capsule does not irritate the iris and is absorbed. Intracapsular extraction is seldom followed by iritis, but this is a more difficult and formidable operation.

LARYNGOLOGY AND OTOLOGY.

(33) Laryngeal Affections.

The treatment of all laryngeal diseases is summed up in one word—rest, *i.e.*, rest to the voice, no talking, no coughing and no obstruction to free breathing. This is the opinion of Andrew Wylie, who adds that the patient must live in dry clear air, without wind, dust or moisture (*Medical Press*, November 17, 1920). Glycerine of heroin may alleviate the coughing and a sedative spray of camphor, chloretone, menthol and eucalyptus in an oily base is useful. Wylie mentions the chief points in diagnosis between the three principal laryngeal affections. (1) Tuberculosis is characterized by the presence of a weak voice, pallor of the larynx and swelling and redness of the posterior part of the larynx and arytenoid cartilages; the ulcers are small and superficial; the granulations are irregular and situated in the interarytenoid space; the epiglottis is affected on its laryngeal surface; there is dysphagia; tubercle bacilli are present in the sputum; the Wassermann test yields no reaction; the patient has night-sweats; there is an evening rise of temperature and physical examination reveals dulness of the pulmonary apex and crepitant rales. (2) Syphilis of the larynx is distinguished by the presence of a rancous voice; swelling and ulceration are present in the anterior end of the larynx; the ulcers are deep and crater-like; granulations are usually present on the ventricular band; the epiglottis is ulcerated on its lingual surface and there are scars on the pharynx. The serum reacts to the Wassermann test. Additional points are its occurrence in young males and the good response to treatment with potassium iodide. (3) Epithelioma is marked by hoarseness of the voice; a papillomatous growth is usually visible on one cord, which is sluggish in movement; dysphagia is present in some cases; there are loss of weight and emaciation; there is no reaction to the Wassermann test; the patient is usually over middle age; finally, the diagnosis may be established by microscopical examination of a portion of the growth.

(34) Endolymph Currents.

In the June, 1920, number of the *Journ. of Laryng., Rhin., Otology*, A. Rejtö traverses the theory of Ewald, that in the horizontal semi-circular canals the ampullo-fugal movement of the endolymph diminishes the rest-tonus of the labyrinth and that the ampullo-petal movement increases this tonus. The adequate stimuli of the end-organs of the semi-circular canals are undoubtedly the endolymph currents and the direction of the reflex movements observed in the muscles correspond with the changes in direction of the endolymph currents. Högyes showed that the *recti laterales* muscles of the eyeball receive their tonus from the labyrinth of the same side and the *recti mediales* from the labyrinth of the other side. The *recti laterales* are innervated by the sixth nerves. During revolution of the head to the right in the horizontal plane the increased tonus of the left *rectus lateralis* arises from the left canal, in which the endolymph current has an ampullo-fugal direction; after the revolution the increased tonus of the right *rectus lateralis* arises from the right canal, in which the endolymph current has also an ampullo-fugal direction. Therefore the endolymph current which increases the rest-tonus, is ampullo-fugal. Bárány has pointed out that the ampullo-fugal endolymph current in the right horizontal canal corresponds to the innervation of the two *recti laterales*. This conclusion is directly opposite to the theory of Ewald. Rejtö holds that under normal circumstances the ampullo-fugal current seems to be the stronger physiological stimulus.

(35) Lateral Pharyngotomy.

Wilfred Trotter (*Journ. Laryng., Rhin., and Otology*, October 1920) advises lateral pharyngotomy as a means of access to large growths of the epilaryngeal region and calls attention to the importance of free exposure before removal is attempted. The exposure involves a series of definite, formal, anatomical procedures. Superior lateral pharyngotomy, by which access is gained to tumours of the tonsil, the anterior faucial pillars and the pharyngeal part of the tongue, consists essentially in dividing the mandible immediately in front of the masseter muscle and then cutting the superior constrictor muscle in front of the tonsil. Inferior lateral pharyngotomy, which gives access to the ary-epiglottic fold, the arytenoid cartilage, the pyriform sinus, the post-cricoid region and, with simple extension downwards, the cervical part of the œsophagus, requires removal of the great cornu of the hyoid bone and the ala of the thyreoid cartilage after reflecting the middle and inferior constrictor muscles from these. Thus the aponeurosis of the pharynx is freely exposed. Tumours in the region of the epiglottis and large growths involving the upper laryngeal opening require exceptionally free access and Trotter secures this by a method which combines the upper and lower operations.

(36) The Eustachian Tube.

Douglas Guthrie (*Edinburgh Med. Journ.*, June, 1920) in a comprehensive paper on the significance of the Eustachian tube in otology, quotes Toynbee's view that the closed tube is necessary for perfect hearing. He states that in the year 1724 Guyot, a postmaster at Versailles, discovered the Eustachian catheter. Guyot relieved his own deafness by pumping air through a bent tube introduced into the naso-pharynx by way of the mouth. Politzer's method of inflation, introduced in 1862, was stated by its deviser to secure better results than were obtained by the use of the catheter or by Valsalva's method. Good results have been claimed for direct treatment of the Eustachian tube under the guidance of the naso-pharyngoscope. Yankauer's method of curettage of the tube in the treatment of cases of chronic suppurative otitis, is said to have given 50% of cures.

(37) Carcinoma of the Pharynx.

Three varieties of carcinoma of the pharynx are frequently seen by the laryngologist: (1) Carcinoma in the region of the base of the tongue and epiglottis; (2) pyriform sinus carcinoma; (3) post-cricoid epithelioma (E. D. D. Davis, *Journ. Laryng., Rhin. and Otology*, November, 1920). (1) Of the first group cases have been observed to commence as a small ulcer in three definite situations, *viz.*: (*i.*) at the junction of the anterior pillar of the fauces and the tongue, (*ii.*) immediately below the tonsil and (*iii.*) in the vallecula. The ulcer excavates and extends rapidly and the deep cervical and submaxillary glands soon become involved. The early manifestations are persistent, severe pain on swallowing, referred to the root of the tongue, blood-stained frothy expectoration and slightly enlarged glands. Occasionally chronic paroxysmal cough is the first symptom. (2) In the second group the ulcer usually starts on the arytenoepiglottidean fold or the floor of the fossa or even on one side of the posterior surface of the cricoid cartilage. Later it may involve the pyriform sinus and the same side of the larynx. The first symptoms are sore throat, associated with a characteristic harshness or roughness of the voice, and a copious, frothy, blood-stained expectoration. There is gland involvement and infiltration of the tissues. Complete dysphagia is uncommon. Hæmorrhage is frequent and tracheotomy is occasionally necessary. Carcinoma in the post-cricoid origin occurs almost exclusively in women. It commences generally well below the area seen in an ordinary laryngoscopic examination. It may commence on the posterior surface of the cricoid cartilage or on the opposite pharyngeal wall. It tends to surround the lumen of the pharynx. The first symptoms are a sensation of soreness or pricking and pain which radiates to the ears during swallowing. Pressure on the larynx or movement in a lateral direction invariably causes pain. Dysphagia occurs early. The great majority of cases, in Davis's experience, are associated with very septic teeth. A direct examination by suspension-laryngoscopy or by the œsophagoscope should be made.

(38) The "Marking-Time" Test in Destruction of the Labyrinth.

As a simplification of the "Babinski-Weil" test J. Dundas Grant (*Proc. of Roy. Soc. Med.*, Vol. XIII., No. 2, December, 1919) has devised the "marking-time" test, which, however, he does not claim to be as conclusive as the first-named. He finds that patients with traumatic destruction of one labyrinth, when asked to mark time, keeping the eyes closed, gradually pivot round to the affected side.

British Medical Association News.

SCIENTIFIC.

A meeting of the Victorian Branch was held at the Medical Society Hall, East Melbourne, on October 6, 1920, Mr. G. A. Syme, the President, in the chair.

Mr. W. Kent Hughes showed various patients as illustrative of the results obtained in treatment by diathermy. In the first instance, a rodent ulcer of eight years' standing had reached the size of a walnut at the time diathermic treatment was instituted. There had been one application in December, 1919, since when no recurrence had appeared. There was now a good scar.

The second patient had been the subject of a rodent ulcer for 2½ years. Diathermy was applied three months ago and appeared so far to have eradicated the malignant process. An equally favourable result was seen in the third patient, in whom a rodent ulcer at the inner canthus of the right eye had been present for seven years. One treatment by diathermy had been given twelve months ago.

In the next patient a very extensive rodent ulceration had proceeded for 4½ years. The maxillary antrum and posterior portion of the orbit were implicated and surgical measures, including removal of the eye, had been adopted. As the extensive malignant process became surgically inoperable, the man was referred to Mr. Kent Hughes for diathermy. The neoplastic tissue had nearly disappeared as the result of several applications.

The fifth patient exemplified another good result obtained by diathermy. In this man a deeply excavating, but not extensive, rodent ulcer had developed at the inner canthus of the left eye. There was some degree of ectropion as the result of scarring, but the ulcerative process had been arrested and healing had occurred. Mr. Kent Hughes did not propose to deal with the ectropion until the lapse of a longer interval insured that there was to be no recurrence.

A severe test of the efficacy of diathermic treatment was afforded by the sixth case. In this patient a very extensive rodent ulcer, leading to destruction of the whole of the right side of the face, including the eye, had been present for 12 years. After periodic treatments, there was one small patch of the malignant disease remaining. In this patient also, Mr. Kent Hughes had completed the first stage of a Gillies's tube-graft; the technique of this method of grafting was demonstrated to the members present.

Mr. Kent Hughes observed that all the patients exhibited, with a single exception, had had extended radium and X-ray treatment. There was need for special care in skin grafting areas to which X-rays and radium had been applied. In fact, a direct flap could not be grafted on to an irradiated surface with any degree of success, so devitalizing was the effect of the rays. The tube method of Gillies, which he had just demonstrated, had so far proved the most successful procedure.

In some remarks relative to the special scope for diathermic treatment, Mr. Kent Hughes said that the method had made headway comparatively slowly, chiefly because it had been largely used in hopeless cases. When in London in 1915 he had been much impressed with the result obtained by Mr. Harmer in a patient with an epithelioma of the floor of the mouth. Following the application of diathermy, an excellent scar had been obtained, which at that time had remained healed for five years. Diathermy might be used as the sole treatment, or as an adjunct to other methods. In dealing with papillomata, nævi and port-wine stains it was especially useful; in the treatment of the last-mentioned the method of fulguration was generally adopted. To carry out fulguration a small flame was flicked over the surface of the stain; it required some nicety of judgement to avoid excessive burning and consequent severe scarring.

Mr. Kent Hughes quoted two examples of the application of diathermy to the treatment of nævi and cavernous angiomata, in the first of which one treatment had led to the disappearance of a large angioma on the dorsum of the tongue and in the second no recurrence of an angioma of the face had been seen after three years.

Of malignant conditions rodent ulcer was undoubtedly the most amenable to diathermy. He stated that he had not had a case of this disease which he had been unable to cure; the elderly patient whom he had shown that evening was the only instance in which any trace of the disease remained. He had treated cases from 27 to 3 years' duration, most of which had been given X-rays and radium at some period or other.

Mr. Kent Hughes expressed the opinion that when rodent ulceration involved periosteum or bone, all methods of treatment were futile except diathermy. When the ulcer was small and the process early, perhaps excision was to be preferred, as being the quicker method, for the action of diathermy was to induce a slow coagulation (heat) necrosis. In regard to epitheliomata, the first examples of diathermic treatment he had seen in England were in epithelioma of the floor of the mouth and of the tonsil. His own experience with these conditions, was disappointing, but he thought that diathermy might be used for the eradication of the local growth, after which the surgeon might remove affected glands. On the other hand, epitheliomata of the face in old people, if there were no glandular involvement, were very amenable to treatment by diathermy.

In malignant disease of the œsophagus it was possible to maintain a better passage for the unfortunate patient and to make the last stages a degree less miserable. Diathermy had been used a good deal in gynæcology, *e.g.*, to clean up a sloughing cervix as a preliminary to hysterectomy.

In enumerating some practical details in the employment of diathermy, Mr. Kent Hughes warned against the use of ether as an anæsthetic. Unless the electrode were in complete contact with the patient there was every likelihood of a spark, which in the presence of ether vapour, might be fraught with disastrous results. The operator was apt to do too much at first and it was perhaps safer to use large electrodes when first employing the apparatus.

Mr. Kent Hughes then described in detail the practical application of diathermy to warts, moles, nævi and for the destruction of larger surfaces, such as rodent ulcer and epithelioma. He had had no experience of its use in medical affections, but diathermy appeared to have some scope in the application of heat to stiff joints and in lumbago and sciatica.

Dr. R. C. Withington in some introductory remarks to a demonstration on psycho-therapy, said that he had received an eleventh-hour request to expand his programme, owing to the fact that Dr. C. E. Dennis was unable to attend and to carry out his projected discussion on ionization.

The first patient he wished to show was a returned soldier who, as the result of a wound, had been left with severe blepharo-spasm, convergent strabismus and defective vision ($^3/_{12}$) in the left eye. One treatment by hypnotism and suggestion had relieved the blepharo-spasm. At a later period Dr. O'Brien operated to correct the strabismus. Several days after the stitches were removed, the patient complained of very severe neuralgia in the left orbital region. He was again referred to him (the speaker) for psychic treatment and under the influence of suggestion the neuralgia was relieved in five minutes.

The second patient was particularly interesting as an instance of functional disorder super-imposed on definite organic disease. This soldier had had meningitis and malaria in 1915. Three months previously, owing to the gross tremor and spasticity in his limbs, the patient could get about only with the greatest difficulty and with the aid of two sticks. Under treatment by hypnosis and suggestion he had improved to such an extent that he was able to walk better with one stick than he had previously walked with two; the tremor was no longer evident. This patient, who was a student, had also complained of restlessness and inability to study. He had been given the suggestion of power to concentrate and he had studied with such success that he had recently passed his examination with a margin to spare of 400 marks on the standard required of him.

The history of the third patient shown by Dr. Withington was that in 1916 he was blown up, gassed and severely burned. He came under treatment for pains in the head and eyes, vomiting and tremor. Under treatment by purely psychic methods he had improved to the point at which the vomiting had ceased and the tremor had disappeared. The man was also sleeping and eating much better.

The fourth patient had been affected with impaired vision for which no organic cause could be detected. The vision

actually was $^{3}/_{10}$. Under suggestion the blurring disappeared and the man could read much better. He had also been left with stammering as a war disability, for which he was receiving treatment at the hands of Dr. Leary.

Dr. Withington explained that the principal methods employed in psycho-therapy were: (*i.*) suggestion alone, (*ii.*) persuasion and suggestion, (*iii.*) hypnosis and suggestion, (*iv.*) psycho-analysis. He referred in very appreciate terms to the work of Dr. Godfrey, who had accomplished much in the removal of the disabilities under which many returned men suffered.

Suggestion might be pre-hypnotic, hypnotic or post-hypnotic. With two of the patients whom he had just exhibited, Dr. Withington gave demonstrations of hypnotic and post-hypnotic suggestion; he remarked that the latter might well be used in the treatment of insomnia.

The application of these principles needed much discrimination. It was to be regretted that hypnotism, owing to the fact that it had been neglected by the medical profession and exploited by charlatans and quacks, had fallen into some disrepute. It rested with the medical profession to restore it to its rightful and judicious use and thus to leave less opportunity for its abuse by the types of persons to which he had referred.

There was no doubt but that used with discrimination hypnosis and suggestion commanded a very wide field. He had found it more difficult to induce the hypnotic state in private practice than in his work at the base hospital. This was no doubt due to the fact that soldiers had become accustomed to discipline and had been taught to obey. Again, in hospital work the patient was generally in a room with others undergoing treatment and this circumstance no doubt rendered him more amenable to suggestion. One class of patient was as a rule very difficult to hypnotize, namely, the neurasthenic with head symptoms, such as a feeling of tension, giddiness and loss of control of thought. Such patients did not seem able to relax and it was a very slow process to teach them how to do so. The operator must gain the confidence of his patient, who was led by persuasion and suggestion to the point at which he really hypnotized himself. As a general rule, quicker results could be obtained if suggestion could be conveyed in the hypnotic state than if suggestion alone were practised.

The application of psycho-therapy was most beneficial in the psycho-neuroses, in functional disorders grafted on organic disease and for the relief of symptoms in organic disease instead of narcotics. As further examples of response to psycho-therapy, Dr. Withington gave an account of the medical history of two patients:—

(*i.*) A man was buried by a shell explosion in 1916 and lost the use of his left arm. He subsequently recovered power in the limb with the exception of the hand. Careful examination had failed to reveal any lesion of nerves or muscles; the patient was therefore treated on psychic lines and under hypnosis and suggestion the hand grip returned in five minutes.

(*ii.*) A soldier was badly bruised over the whole of the back and one side as the result of injury in a shell explosion. He manifested much spasm and complained of pain in the back and legs. Dr. Dane had investigated this man's case and had concluded that there was no organic disease, a finding with which he (the speaker) agreed. Treatment in one way and another had been pursued for over three years and the man was, if anything, in worse condition than he was at the outset. Under suggestion all the spasm disappeared and the legs straightened in a few minutes. Whereas this man had been told that he would never work again, he was now engaged in his former occupation and following his favourite sport of football.

In this instance the mind had retained its impressions of pain and stiffness which it received at the time of the injury; the symptoms and disability had therefore persisted.

Dr. Withington detailed the successful practice of hypnosis and suggestion in a case of vomiting of pregnancy and in an acute attack of asthma. He remarked that habit-spasms were very amenable to treatment in this manner, as indeed were all functional troubles. An illustrative case to show the good result attendant on the use of psycho-therapy in chronic alcoholism was also cited. The speaker concluded with a reference to anæsthesia obtained by hypnosis; he spoke of a case in which it was utilized for tooth extraction. A remarkable feature of this extraction was that there was little or no bleeding from the gum.

Dr. T. Garnet Leary referred to his association with Dr. Withington in the work the latter had presented and spoke of his personal experiences in various types of cases. He stated that the physical basis must be definitely eliminated before adopting treatment by psycho-analysis; this term included hypnotic suggestion and persuasion. The history of each patient should be carefully studied, with special reference to his pre-war occupations, the wages earned and the extent to which he had participated in games.

Dr. Leary had found that many patients in whom the results of treatment were unsuccessful—men who had been attending for years at the various hospitals—were not true "dinkum diggers." The condition had been termed "shell shock," which was entirely a misnomer. The records and histories of these patients showed that it was impossible to remove the psychical elements as long as they remained in their environment and continued to draw sustenance allowance. Many of these patients had not seen active service conditions and were obsessed with imaginary grievances.

Dr. Leary explained that general and special muscular relaxation with the minimum of self-consciousness was his sheet anchor in psycho-therapy. He instanced the application of the principle in the treatment of stammering and speech defects. He went on to show how helpful this method, as opposed to narcotics, could be in the production of sleep and urged those present to adopt suggestion with persuasion whenever opportunity offered. The speaker referred to the method of "abreaction" as very effective and remarked that it seemed to remove the repression from the conscious mind of memories of unpleasant and horrible experiences. As an instance he quoted the symptoms and actions of a patient observed in the hypnotic state; the soldier described his feelings under a bombing by enemy aeroplanes whilst he was on duty at an ammunition dump. The patient "lived" it all over again and it was apparent how intense was the agony. After several visits with treatment, this man's symptoms and physical signs completely disappeared and he was able to resume his former work.

Dr. Leary disagreed with the theory which referred many neuroses to a sexual basis and pointed out that masturbation was, in his opinion, the result of the neurosis. This had been well exemplified in "D.A.H." and other functional states. In civil practice it had been found a contributing cause in some instances. In conclusion, he paid a tribute to the magnificent work of Dr. Clarence Godfrey, work which had been proceeding for many years. From his own observations of the results, Dr. Leary expressed the opinion that Dr. Godfrey must have saved the country thousands of pounds in helping to rehabilitate so many helpless patients to the point at which they could resume their former occupations.

Dr. Paul Dane said that he had been associated with Dr. Godfrey, Dr. Leary and Dr. Withington for some time. He had seen the work of these gentlemen and could testify to the efficiency of their methods. Indeed, in some cases the results were wonderful. Some failures were recorded, as in other forms of treatment. It was difficult to understand why some subjects should be not amenable to hypnosis; he (the speaker) had found that, generally speaking, the older the individual, the greater the difficulty in inducing the hypnotic state. Males were more easily influenced than females and unmarried females were extremely resistant.

Some of the soldier patients at No. 5 Australian General Hospital were very easily hypnotized; in fact, so easily that one was sometimes dubious about them. In the hospital where the men were all treated in the same pavilion, conditions were very much more favourable than those obtaining in private practice. He had found treatment by hypnosis and suggestion sometimes difficult to carry out in private patients.

Dr. Dane described a method to which he had resorted for the induction of the hypnotic state in a boy, aged 15 years, with chorea. This lad had such marked blepharospasm that he could not look at an object for longer than a second or two. He was given a strongly flavoured drink, which he was led to believe was a narcotic. The suggestion was successful with this boy, who had been resistant to other methods. After three treatments he was very much

better, although there was still some residual blepharospasm. The case was not always hopeless when the patient was resistant to hypnotism. Some patients were cured by analysis and persuasion. Dr. Dane quoted as an instance the case of a patient with functional paresis of the left arm, to whom the full use of the arm was restored by persuasion in two treatments. Another patient with recurring functional paralysis of the vocal cords was cured by analysis and re-education of the voice. In both of these hypnotism had failed.

He agreed with Dr. Leary that the greatest adjunct to success was to secure complete relaxation, but admitted that to do so was often very difficult. Failure was often experienced under hypnotism in cases in which success might be attained by persuasion and analysis. In conclusion, he expressed his adherence to the doctrine that the neuroses, neurasthenia and psychasthenia were all, broadly speaking, referable to a sexual basis.

Dr. de Burgh Griffiths asked if any particular personal quality was essential to practise treatment by hypnosis successfully.

Dr. James Booth said that he had followed Dr. Withington's demonstration with every great interest and could confirm all that Dr. Withington had claimed in regard to the very great utility of treatment by suggestion. He could also confirm the observation that in tooth extraction under hypnosis there was little or no bleeding from the gum. He could not agree with the conception of a sexual basis for all neuropathic states. He observed that English psycho-analysts had abandoned the teachings of Freud as to the causation of these conditions. He had not found any marked difference between men and women with respect to their susceptibility to hypnotic suggestion, but certainly the female dipsomaniac was the most difficult subject of all to influence in this manner.

Dr Booth endorsed the statement of Dr. Withington that psycho-therapy had been for too long left in the hands of charlatans and quacks; it had thereby been to some extent discredited and it was the duty of the medical profession to raise it to its proper status.

Dr. Reginald Howden asked if suggestion could be conveyed during normal sleep.

Dr. W. Ernest Jones, after expressing the interest with which he had followed the discussion, said that in 1914 he had addressed a letter to the Committee of Management of the Melbourne Hospital in which he suggested the establishment of a psychological clinic. The work illustrated in the evening's demonstration would form one side of such a clinic. He had tried again recently to have a beginning made in psychiatric clinics and the question had been raised at the recent Brisbane Congress. The demonstration should impress all who were associated with the teaching staffs. There was no doubt that the psycho-neuroses were very much neglected in clinical teaching.

It was a great pleasure for him to hear the tribute paid by Dr. Withington to the work of Dr. Godfrey, who had, indeed, carried out pioneer work in Australia. Twenty years ago Dr. Godfrey had applied the principles of psycho-therapy to the treatment of inebriety, but the war had opened up a vast new field for psychic methods. It was essential that these methods should be thoroughly understood if they were to deal satisfactorily with such "border line" conditions as hysteria and psychasthenia, which were pre-eminently the cases for a psychic clinic. By the organization of such clinics an enormous mass of chronic insanity might be obviated. He trusted that the demonstration would further the arguments in favour of the appointment of psychiatrists at such institutions as the Melbourne and Alfred Hospitals. Dr. Jones referred to the lack of such teaching in the training of the medical student and mentioned the use to which money of the Red Cross Society was to be put in three Australian States for the establishment of these clinics.

Dr. C. A. Courtney recognized the utility of hypnosis in the diagnosis and treatment of certain conditions. Many soldiers had no doubt been cured of serious disability and much money had been saved through the agency of psycho-neurosis clinics at military hospitals. Repatriation experience seemed to show that frequent hypnosis rendered the patient increasingly dependent on suggestions other than his own. It was obvious that the patient who had been hypnotized that evening in an environment totally incompatible with sleep, had become over-suggestible. He maintained that soldiers were not more easily hypnotized than civilians. The military patients at the clinics were the residium of many thousands who had been subjected to treatment of various kinds for long periods. The mentality of many of the men was markedly below the average. Several had not seen any active service. Among the patients afflicted with the worst forms of so-called "shell shock" were men who had not even embarked from Australia. It was therefore necessary to exercise care in treating these patients with hypnosis. Hypnosis, as well as being exploited by the charlatan, could become the happy hunting ground of the pure malingerer and lead swinger. He thanked Dr. Withington for having demonstrated so clearly the valuable work carried out at the psycho-neurosis clinic.

Mr. G. A. Syme stated that the question raised by Dr. Jones was one of great importance. He fully agreed that psychiatric clinics should be established at the larger hospitals.

Dr. Withington, in reply to Dr. de Burgh Griffiths, stated that no person could be hypnotized against his will. The only special personal quality in the operator that was essential, was the power to gain the confidence and co-operation of the patient.

With reference to the point raised by Dr. Howden, he said that while he had had no personal experience in the matter, it had been recorded by several authorities that suggestion could be conveyed to children in normal sleep.

To Dr. Courtney's questions, he replied that the type of neurasthenia previously referred to was often resistant to hypnotism and required treatment by persuasion and suggestion, or psycho-analysis. In some cases the method of "abreaction," mentioned by Dr. Leary, was most effective.

In regard to the permanency of the cures, cases of functional paralysis, spasm of muscles and vomiting responded quickly and seemed to have no tendency to recur. On the other hand, neurasthenic symptoms, anxiety neuroses and obsessions were slower to disappear and more liable to return should the conditions of shock, strain and worry recur. The idea that this form of treatment involved a loss of self-reliance or will power was utterly wrong. Its main purpose was to restore self-control and self-confidence, to educate the mind and to strengthen the will. All suggestions were directed towards that end.

MEDICO-POLITICAL.

At a meeting of the Council of the Victorian Branch, held on December 16, 1920, the following were appointed members of the several sub-committees of the Council. In each case the member whose name appears first acts as convener to the Committee:

Committees.

(1) *Organization*: Drs. J. Gordon, J. F. Wilkinson, R. H. Fetherston, J. Newman Morris, J. Ramsay Webb, W. H. Summons and all Honorary Secretaries of Divisions.

(2) *Ethical*: Drs. A. V. M. Anderson, Alex. Lewers, J. W. Dunbar Hooper, G. A. Syme, B. Milne Sutherland, Fay Maclure and A. Jeffreys Wood.

(3) *Legislative*: Drs. Stanley Argyle, J. Newman Morris, J. Ramsay Webb, R. H. Fetherston, L. S. Latham and Victor Hurley.

(4) *House*: Dr. C. H. Mollison.

(5) *Scientific*: Drs. J. H. Anderson, Alex. Lewers, H. Douglas Stephens, B. Milne Sutherland, Konrad Hiller, L. S. Latham, W. Dismore Upjohn, Victor Hurley, Fay Maclure and A. E. Rowden White (with power to add to their number).

(6) *Medical Agency*: Drs. W. Kent Hughes, C. H. Mollison, J. Gordon and W. Dismore Upjohn.

(7) *Building*: Drs. W. Kent Hughes, C. H. Mollison, R. H. Fetherston, Victor Hurley and J. F. Wilkinson.

Dr. Alex. Lewers was appointed Honorary Assistant Secretary.

Dr. Frank Lind was appointed Honorary Assistant Treasurer.

Dr. T. P. Dunhill was appointed Representative on the Council of the British Medical Association.

Dr. R. H. Fetherston and Dr. G. A. Syme were appointed Representatives on the Federal Committee of the British Medical Association in Australia.

Dr. Reginald Webster was appointed Victorian Correspondent to the *British Medical Journal*.

The following were appointed representatives of the Council on the several organizations named:

Bush Nursing Association: Dr. H. Douglas Stephens.

Advisory Board to Medical Inspectors of Schools: Dr. H. Douglas Stephens.

Free Kindergarten Union: Dr. W. Kent Hughes.

Venereal Diseases Advisory Council: Dr. C. H. Mollison.

Executive Council of the Victorian Baby Health Centres: Dr. A. E. Rowden White.

Post-Graduate Permanent Committee: Drs. A. V. M. Anderson and J. W. Dunbar Hooper.

The undermentioned have been nominated for election as member of the New South Wales Branch of the British Medical Association:—

John Hughes, Esq., M.B., Ch.M., 1920 (Univ. Sydney), Cessnock.

Roy Cadell Traill, Esq., M.B., Ch.M., 1920 (Univ. Sydney), Clarence Street, Burwood.

Robert Blackie Austin, Esq., M.B., Bac. Surg., 1910 (Univ. Glasg.), Armidale.

The undermentioned have been elected as members of the New South Wales Branch of the British Medical Association:

C. Blaxland Levick, Esq., M.B., Ch.M., 1920 (Univ. Sydney), Ernest Street, Hunter's Hill.

Hubert K. Porter, Esq., M.B., Ch.M., 1920 (Univ. Sydney), 27 Wharf Road, Balmain.

W. Langley Brookes, Esq., M.B., 1919 (Univ. Sydney), Livingstone Road, Petersham.

David C. Henry, Esq., M.B., Ch.M., 1901, M.D., 1910 (Univ. Edin.), F.R.C.S., Edin., 1908; Crookwell.

Correspondence.

PARANOIA AND OCCULTISM.

Sir: The letter of Dr. Nisbet advising medical men to approach the subject of spiritualism with an open mind, adopts a fair and reasonable attitude. On the one hand, we have Joseph McCabe and his followers stating very definitely that all spiritualistic phenomena are produced by physical means and on the other, we have scientific men, such as Sir Oliver Lodge, Sir William Barrett, Sir William Crookes, Alfred Russell Wallace, Dr. Crawford and many others, who have written books showing that they have no doubt whatever that these psychic phenomena exist; and the fault has been up to the present that the advocates on both sides re-affirm their attitude instead of endeavouring to explain these phenomena as simply mundane productions and therefore not supernatural. I have never seen a spook, but the views of some of our leading scientific men might be accepted as a basis for further investigation by those who desire to follow up the matter, for this is the only way by which the death blow will be given to spiritualism.

Dr. Crawford in his book, "The Reality of Psychic Phenomena," described a "whitish translucent matter" passing from the medium and it appeared from Dr. Crawford's experiments that the medium, a Miss Goligher, lost a weight corresponding to the amount of this matter thrown off from her body, as it was proved by a weighing machine that her weight was reduced by several pounds when this matter was thrown out by her. Sir Conan Doyle now states that this matter is called "psychoplasm" and is of a cellular character. It appears to me that this "psychoplasm" is used to produce rapping and move pendulums of clocks, ornaments, tables, etc., and can be moulded into any form, thus producing the so-called spirits, as photographed and seen at the *séance*, as the subjective mind of the medium, according to Hudson in his book on "Psychic Phenomena," is capable of reading the subjective mind of the investigator and may we not, therefore, conclude that the medium is able to mould the "psychoplasm" into the desired form, thus producing the so-called spirit? It is also stated that a spirit has been observed in an ordinary room during ordinary conversation by one only of a number of people present and can this not be accounted for by the waves of thought (or even "psychoplasm") in the form of vibrations striking the retina or in the case of a voice the auditory mechanism of the percipient? These waves of thought would explain the receipt of the "S.O.S." and other signals by the relatives of those who died during the great war, as the signal appears to have been received about the time of the death of the person transmitting the message. Would not "psychoplasm," mesmerism and telepathy account for the phenomena of so-called spiritualism? Investigations of spiritualism might be carried out on these and other lines by suitable investigators and in the meantime there might be applied to spiritualism the views of Huxley when he wrote: "I neither affirm nor deny the immortality of man. I see no reason for believing it, but, on the other hand, I have no means of disproving it." Investigation of "psychoplasm" might cover amongst other things: (1) A thorough microscopical examination. (2) Its location in the human body; is it part of the nervous system? Is it peculiar to certain individuals and, if so, have these folk some special nervous centre controlling it? (3) Is it dependent on a vascular supply for its nutrition? (4) How is its vitality maintained outside the human body? (5) What is its action in levitation? (6) Does it continue to exist after death of the mortal body? If so, then, for how long? This might be considered in the investigation of ghost stories. (7) Is it capable of transference from one body to another (*i.e.*, from a dead to a living body). If it exists after death, does it gradually disintegrate? Telepathy might also be investigated and might I suggest that as the auditory nerve is concerned with the maintenance of equilibrium and hearing, may not the olfactory nerve control smell and an extra special sense of the nature of telepathy. The olfactory nerves might well represent antennæ and the various nasal sinuses function in relation to them.

Yours, etc.,

R. A. PARKER, M.B.

"Cottesbrooke,"
140 Sackville Street,
East Kew, Victoria,
January 1, 1921.

REPRINTS OF ARTICLES PUBLISHED IN *THE MEDICAL JOURNAL OF AUSTRALIA*.

It has been our practice to offer the authors of articles appearing in the columns of this *Journal* reprints at cost price. Unfortunately, the ever increasing cost of production and of paper has been reflected in the accounts which we have been compelled to render to those who have ordered and obtained reprints. The cost of a few reprints of a short article at the present moment is very high. In order that authors may realize the full effect of basic wage and other awards on the price of reprints, we append below the charges obtaining at present. Postage is included in the figures. Unless authors give specific instructions, reprints are prepared in small size (demy octavo). An article occupying 1½ pages of the *Journal*, will make up to four pages of reprint size; an article occupying about 3 pages will make up to eight pages of reprint size and so on.

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In the course of a guarded reply given to a question asked in the New South Wales Legislative Assembly on December 23, 1920, the Minister for Public Health stated that "for the time being" only certain sections of the *Venereal Diseases Act* would be enforced. The sections were not specified.

Books Received.

HYGIENE OF COMMUNICABLE DISEASES: A Handbook for Sanitarians, Medical Officers of the Army and Navy and General Practitioners, by Francis M. Munson, M.D.; 1920. New York: Paul B. Hoeber; Demy 8vo., pp. 793, with 36 illustrations. Price, $5.50.

NOUVEAU TRAITÉ DE MÉDICINE, Publié en 21 Fascicules sous la Direction de MM. G. H. Roger, F. Widal et P. J. Teissier. Fascicule Premier: Maladies Infectieuses; 1920. Paris: Masson et Cie; Crown 4to, pp. 482, with 55 figures in the text and 3 coloured plates. Price, 35 fr. net.

THE MANAGEMENT OF INFANTS IN HEALTH AND SICKNESS, by G. Bruton Sweet, M.B., Ch.M.; 1920. Auckland: Whitcombe and Tombs, Limited; Demy 8vo., pp. 107.

Proceedings of the Australian Medical Boards.

VICTORIA.

The undermentioned have been registered under the provisions of Part I. of the *Medical Act, 1915*, as duly qualified medical practitioners:—

Robert Brookes, L.S.A., 1900; L.M.S.S.A., 1914, Lond., Oriental Hotel, Collins Street, Melbourne.

William Graham Oakeley, F.R.C.S., Edin., 1920, c/o. W. Ramsay, 80 Swanston Street, Melbourne.

The following additional qualification has been registered:

James Riddell Bell, M.D., Melb., 1920.

The name of the late Dr. Albert William Graham has been removed from the Register.

Medical Appointments.

It is announced that Dr. H. F. Harvey (B.M.A.) and Dr. H. T. Kelsall (B.M.A.) have been appointed, with two other gentlemen, Trustees of the Public Library, Museum and Art Gallery of Western Australia.

Dr. S. E. Craig (B.M.A.) has been appointed Medical Officer of Health to the Bayswater District Road Board of Western Australia.

The appointment as Public Vaccinators of Dr. H. F. Wickens (B.M.A.) at Rainbow and of Dr. E. A. Guymer at Smythesdale, Victoria, is announced in the *Victoria Government Gazette*.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser," page xxvii.

Infectious Diseases Hospital, Fairfield, Victoria: Junior Resident Medical Officer.

Medical Appointments.

IMPORTANT NOTICE.

Medical practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429 Strand, London, W.C..

Branch.	APPOINTMENTS.
NEW SOUTH WALES. (Hon. Sec., 30-34 Elizabeth Street, Sydney.)	Australian Natives' Association. Ashfield and District Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham Dispensary. Manchester Unity Oddfellows' Medical Institute, Elizabeth Street, Sydney. Marrickville United Friendly Societies' Dispensary. North Sydney United Friendly Societies. People's Prudential Benefit Society. Phœnix Mutual Provident Society.
VICTORIA. (Hon Sec., Medical Society Hall, East Melbourne.)	All Institutes or Medical Dispensaries. Manchester Unity Independent Order of Oddfellows. Ancient Order of Foresters. Hibernian Australian Catholic Benefit Society. Grand United Order of Free Gardeners. Sons of Temperance. Order of St. Andrew. Australian Prudential Association Proprietary, Limited. Mutual National Provident Club. National Provident Association.
QUEENSLAND. (Hon. Sec., B.M.A. Building, Adelaide Street, Brisbane.)	Australian Natives' Association. Brisbane United Friendly Society Institute. Stannary Hills Hospital.
SOUTH AUSTRALIA. (Hon. Sec., 3 North Terrace, Adelaide.)	Contract Practice Appointments at Renmark. Contract Practice Appointments in South Australia.
WESTERN AUSTRALIA. (Hon. Sec., 6 Bank of New South Wales Chambers, St. George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND: WELLINGTON DIVISION. (Hon. Sec., Wellington.)	Friendly Society Lodges, Wellington, New Zealand.

Diary for the Month.

Jan. 26.—Vic. Branch, B.M.A., Council.
Jan. 27.—S. Aust. Branch, B.M.A..
Jan. 27.—Q. Branch, B.M.A., Council.
Feb. 1.—Federal Committee of the B.M.A. in Australia.
Feb. 2.—Vic. Branch, B.M.A., Presentation of Balance Sheet, 1920.
Feb. 4.—Q. Branch, B.M.A..
Feb. 8.—N.S.W. Branch, B.M.A., Ethics Committee.
Feb. 10.—Vic. Branch, B.M.A., Council.
Feb. 11.—Tas. Branch, B.M.A., Annual General Meeting.
Feb. 11.—Q. Branch, B.M.A., Council.
Feb. 11.—S. Aust. Branch, B.M.A., Council.
Feb. 15.—N.S.W. Branch, B.M.A., Executive and Finance Committee.
Feb. 15.—Illawarra Suburbs Med. Assoc. (N.S.W.), St. George District Hospital.
Feb. 18.—Eastern Suburbs Med. Assoc., Annual (N.S.W.).

EDITORIAL NOTICES.

Manuscripts forwarded to the office of this journal cannot under any circumstances be returned.

Original articles forwarded for publication are understood to be offered to *The Medical Journal of Australia* alone, unless the contrary be stated.

All communications should be addressed to "The Editor," *The Medical Journal of Australia*, B.M.A. Building, 30-34 Elizabeth Street, Sydney. (Telephone: B. 4635.)